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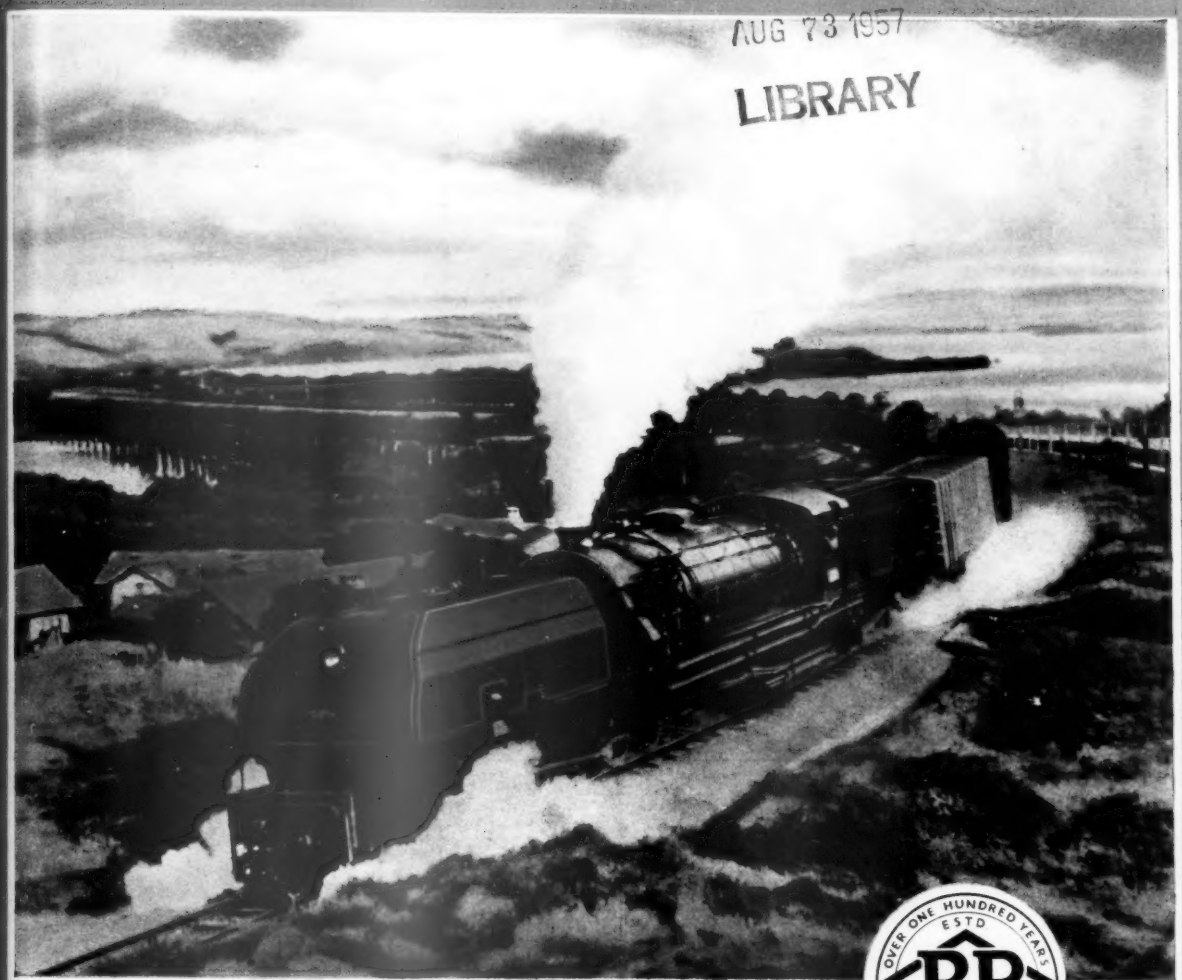

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The Cost of Modernisation

THERE has been unnecessary ado in Parliament, as recorded on another page, over the eventual cost of the British Railways modernisation plan; concern has been expressed at the possibility of the total cost of implementation rising to £2,000 million instead of the £1,200 million envisaged when the plan was launched early in 1955, with the suggestion that the British Transport Commission has not been exercising close budgetary control or taking cognisance of increases in costs. Apart from a desire to harass the Government, which has undertaken to take all possible steps to ensure that the plan is implemented as quickly as possible, there is no obvious reason for expressing such misgivings. It was not possible, over two-and-a-half years ago, in the light of prices in the autumn of 1954 to forecast increases in costs which might occur in the next 15 years, and disclaimers to that effect were made in the plan and in the recent White Paper. There was, it is true, the optimistically precise estimate of the return of £85 million a year to be achieved ultimately. That does not alter the fact that it is idle to expect the final estimate of expenditure not to be exceeded in long-term projects of this kind. Increases in costs to some extent may be expected to be met by increases in revenue—as is apparent in the present inflationary trend. In addition, there have been, as must be obvious in planning for an organisation so technically complex as a railway, important alterations, as for instance in the amount of electrification, which is being extended to more lines than were originally envisaged. The plan is also well ahead of schedule in various spheres. As Lord Fairfax pointed out on behalf of the Government in the House of Lords on Monday, reassessment of costs is in progress. We are confident that the Commission is keeping a close watch on, and, as far as possible in an inflationary period, control of, costs. What is much more urgent is the shorter-term obligation on the Commission to balance its accounts by 1961-62 and repay the sums advanced by the Treasury. In any event, whatever the final cost of the plan, it is essential to the national economy as ensuring the efficiency of the railways as a means, to which no alternative exists, of moving large quantities of freight and passengers. The alternative to this expenditure on the railways is economic loss on a national scale.

Monsieur A. Parmantier

THE death in June of Ange Parmantier, who retired only last year from the position of Directeur du Matériel et de la Traction, French National Railways, removed one of the most decided characters of the postwar European railway world. It was this attribute, rather than the skill in locomotive design, which he had already shown in marked degree on the old P.L.M. system, which led to his selection for that high post in 1947, for technical merit alone was not enough to cope with the jaded, jarring and loosely-strung elements as they were in France just after the war, and weld them into a whole directed effectively from the centre. Parmantier did this; yet it required from him much that on the surface tended to belie his name. Yet all the while he also kept French locomotive practice—steam, diesel and electric—in the very forefront. He could not claim the design of such astonishing electric locomotives as the C.C. 7001 and B.B. 9001 classes; but his was the personality which accepted them and ran them hard, long and fast. Despite the prime moving of Monsieur Louis Armand, the real responsibility for the success or failure of the two series of record runs culminating in 331 km.p.h. fell on Parmantier's shoulders; like Gresley before him, he always took a practical part in such events.

Capturing Canadian Markets

THE Economic, Technical & Goodwill Mission to Canada (for membership, see this week's Personal Section) has returned to this country with some home truths and sound advice, of far wider application and value to the British engineering industry than the section with which the Mission was directly concerned. Broadly, its findings have a familiar ring: price and quality of British goods are acceptable to Canadian buyers, but complaints are made about delivery dates and after-sales service. At present, British manufacturers contribute a mere 5 per cent to the total Canadian purchase of oil equipment, the product in which the Mission was primarily interested. The Mission stresses the importance of a firm delivery date, as Canadian contractors commonly maintain on site a large and expensive labour force, and subordinate everything to the ensurance of punctuality in delivery of equipment. After-sales service and availability of spares, together with the supply of a constant stream of technical literature, are other firm selling points on which Britain's chief competitor—the U.S.A.—is particularly strong. It is essential for the prospective entrant into the Canadian market to visit the territory personally and to pursue a very active and aggressive selling policy. A local representative is also of first importance.

Benguela Railway Prosperity

THE annual report and accounts of the Benguela Railway Company for 1956 show some remarkable results that might well be envied by almost any other railway company in the world. The number of railways paying a 15 per cent dividend, as the Benguela is this

year, must be small indeed. The rise in receipts from Esc. 392,191,311$25 in 1955 to a record of Esc. 474,330,701$60 in 1956 was attributable for the greater part to increased freight traffic, but the improvement in net earnings from Esc. 157,177,367$85 to Esc. 233,742,531$30 was largely the result of working economies which confined the increase in working costs to Esc. 5,574,226$90—a small amount compared with the increase of Esc. 82,139,390$35 in receipts. The efficiency of operation is shown by the steady fall in the operating ratio in the last few years—in 1956 it stood at only 50·7. As the auditors' report points out, the 15 per cent dividend does not yet compensate shareholders for the many years in which no dividend was paid, but there is no doubt that the railway is being managed to the best advantage at the present time. Proposals to increase the nominal capital to double the present figure by means of partial revaluation of assets have been approved in principle by the Portuguese Government.

Overseas Railway Traffics

SOUTH African Railways & Harbours total earnings from railway and harbour services in June were approximately £1,785,000 compared with £1,728,000 in June, 1956. Railway earnings were £113,000 below the level estimated for June, and harbour earnings were £4,000 short of the estimated figure for the month. Total railway revenue for the first half of the year was approximately £8,533,000 compared with £8,767,000 for the corresponding period last year, a decrease of £234,000 or 2·7 per cent, the greater part of which was attributable to the drop in receipts on the Tanganyika Central Line. Paraguay Central Railway receipts for the year ended June 30, 1957, were G97,445,628 compared with G75,559,470 for the previous year, an increase of G21,886,158. This trend continued in the first week of the new year with receipts G422,721 higher than in the corresponding week of last year. The latest figures received from the Midland Railway Company of Western Australia Limited show that estimated road and rail receipts for April were £A74,556 (against £A69,338 for April, 1956), whilst the aggregate for the 10 months July-April was £A764,320 (£A695,802).

Mobile Diesel Instruction Facilities

THE value of a mobile instruction centre able to tour the various depots of a railway system already is appreciated by railway authorities, and we have described from time to time such items as ambulance, civil defence, and locomotive instruction trains. The instruction train for the demonstration of diesel railcar and shunting locomotive equipment put into service by the Eastern Region recently extends the scope of mobile instruction to a new phase. This two-coach train, described elsewhere in this issue, is the first of its type to be used by British Railways. It will tour motive power depots in the Region to help qualified or trainee driving and maintenance staff to understand more fully the equipment with which they deal. Schools for the initial training of drivers and maintenance staff of the Region already exist at Ilford and Derby (London Midland Region), but it is clearly advantageous to provide facilities to recapitulate and add to instruction which has already been assimilated without the need for personnel to be away from their work for more than a few hours.

Tank Wagon Traffic

THE three prototype tank wagons, designed and built by Charles Roberts & Co. Ltd., which were on view at Marylebone Station on July 25, represent at least as great an advance in their way as do the British Railways prototype coaches exhibited at Battersea recently. The wagons have been designed on a 15-ft. wheelbase and all three vehicles have similar underframes. The tank capacity varies from 6,149 gal. for the class "A" wagon to 5,370 gal. for the class "B" and 4,880 gal. for the creosote wagon. The variation is caused by the maximum volume of liquid at various specific gravities that can be carried within the maximum gross weight of 35 tons on a four-wheel vehicle. To test behaviour in traffic, the prototype wagons have been fitted with different types of axlebox. The class "A" wagon has conventional axleboxes with Skefko roller bearings, the class "B" has Timken roller bearings and cast steel horseshoe adaptors, and the creosote wagon has Isothermos oil axleboxes. These wagons are intended eventually to be worked in fast trains and their braking powers have been enhanced by fitting two 22-in. vacuum cylinders. A lever on the side enables one cylinder to be cut out when the tank is empty. Two of the prototypes are fitted with Oleo buffers and the other with Dowty buffers. As recorded in our issue of July 12, 1957, Esso Petroleum Limited, owners of the class "A" and "B" vehicles, have ordered 753 wagons of these types. The creosote wagon is owned by British Railways.

Full-Size Alweg Monorail Train Demonstrated

THE Alweg monorail system, which has been under development near Cologne for several years with a train and track built to reduced scale, has now progressed to full-size trials with a coach capable of seating 100 and a track some 2,000 yd. in length. The electrically-powered demonstration coach has a length of 37 ft., is 10 ft. wide, and can carry up to 180 persons including standing passengers. Although a high-speed train on the Alweg system—which uses a concrete beam with suitable bearing surfaces, on which the train rests saddle-fashion, as a rail—can be expected to achieve some 240 m.p.h., the Alweg Company seems to be concentrating on urban applications at the moment. This is presumably because of the contract awarded to the company recently for the rebuilding of the public transport network of Sao Paulo. The demonstration coach is thus limited to some 50 m.p.h. but is stated to have outstanding acceleration. Dr. Axel Wenner-Gren, the Swedish industrialist after whom the system is named, was present in person when the coach was demonstrated on July 28, and spoke of the many inquiries received from German and American cities. A contract between the British Columbian Government and the company envisages an Alweg line connecting with the Pacific Great Eastern Railway and running into territory at present undeveloped.

Public Attitude to Accidents

A WRITER in the Austrian paper *Eisenbahn* comments on the habit found in many countries of giving wide publicity to any railway accident and passing over those arising with other forms of transport often with the briefest reference. The derailment at Hütteldorf, near Vienna, on May 19, attended with one fatality, the cause of which has not been found with absolute certainty, was at once featured in heavy headlines in the Vienna newspapers; immediately afterwards the news that in one week alone there had been 1,406 road traffic accidents, including 70 cases of drunken drivers and 52 of guilty ones failing to stop, in which 36 persons were killed and 1,249 injured, was printed without comment in an inconspicuous position. The author of the article also points out that any little fault of railway working is almost invariably made the occasion for grumbling in the Press, which frequently accepts anything of the kind in connection with other kinds of transport without objection. An example of this is found in the complaints voiced about slacks imposed in connection with permanent way and engineering works, being undertaken as part of the modernisation plan and often intended to contribute to raising the level of rail safety still further. The very rarity of serious railway accidents seems to be an added reason for making a disproportionate fuss when one does take place.

Signalling on Budapest Underground

THE reference in our columns recently to the underground electric railway in Budapest, opened in 1896, recalls the fact that it was signalled automatically from

the commencement, on a system devised by Siemens & Halske. The block sections extended from starting signal to starting signal, without intermediate signals of any kind, and the working was controlled by treadle contact boxes, the lever arms on which were depressed by rollers carried on bars attached to the rear of each train, in this respect much resembling the system introduced by Timmis on the Liverpool Overhead Railway three years earlier. The signals were simple colour lights, red and white, with repeaters in each station inspector's office showing the aspects of the starting signal in rear. The contact boxes functioned similarly to 2-way electric light switches, step by step. When a train left a station and worked the treadle it reversed the contacts in it, which were rotated always in the one direction, putting the starting signal to red and restoring the one at the station in rear simultaneously to white and so on in continuous succession. Presumably this equipment has by now given place to more modern devices.

More Remote Control on London Transport Lines

THE introduction on July 27-28 of parallel working between Gloucester Road and South Kensington, District and Circle Lines, has been accomplished by the replacement of the route-lever type power frame installed in the Cromwell Road signalbox in 1936 by push-button desks, with an extension of the area of control and some re-arrangement of the signalling. The work follows the practice applied in other installations in the last few years but certain of the remotely controlled equipment originally provided has been retained, with "interlocking machines" in the rest of the area. There is also some automatic junction working governed by the train describers, with a number of the recently perfected 10 kc. jointless "rail circuits" for the releasing of route and other electrical locking. The track diagram differs from those hitherto used by London Transport and has illuminated white lettering on a black background. A description of the installation will appear in a forthcoming issue.

Transport and the Common Market

FRANCE'S ratification last week of the Rome Treaty removes the last major obstacle to the establishment of a common market in Europe by the six Messina powers, France, Western Germany, the Netherlands, Belgium, Luxembourg, and Italy. It cannot appear overnight; so there is to be a transition period of 12-15 years, divided into three stages of four years each. French ratification was awaited before the other countries would proceed to the final stage. Now that has taken place, political interest shifts from the Continent to the United Kingdom, whose relationship with the common market must be speedily determined. Enthusiasm of the "six" for a free trade area through which the O.E.E.C. countries could associate with the common market has lessened somewhat since the original proposal by Mr. Harold Macmillan. More criticism has also emerged in this country as well as in the Commonwealth since France insisted that her overseas territories be included. Be that as it may, the formation of what to all practical purposes is a customs union by the major industrial countries of Western Europe places them at an advantage and would weaken the competitive power of Britain in their markets, around which protective walls could be erected. Some association, therefore, is essential so that free and fair competition among all Western European countries is maintained.

That is no easy task, as the Messina powers have found, and much of the Rome Treaty consists of provisions for the removal of economic, financial, and other differences which, if they remained, could cancel out the greater freedom of trade aimed at by the removal of tariffs and other trade barriers. For instance, transport charges could be manipulated to give specially favoured treatment to exporters or other classes of traders. General or specific subsidies, overt or covert, might be granted to transport operators to enable discriminatory charges to be made to help particular industries; or heavy deficits might be deliberately incurred and financed by the State to permit transport charges to be lower than cost, so as to aid industry. These are not mere possibilities, but practices at present employed in many countries by State-owned railways as a matter of policy. Similarly, in road transport, costs and charges are related to the level of fuel taxes, and in every Continental country, in contrast with Britain, diesel fuel used in road vehicles is taxed substantially less than petrol.

The treaty accordingly provides for a common transport policy to be established by stages within the common market and for common rules for international transport to be laid down. By the end of the second stage, all rates which discriminate by reason of the national origin of destination of the goods transported, are to end. From the beginning of the same stage all State subsidies are forbidden, unless specifically authorised by the authority. To work out this common transport policy will certainly prove difficult, and a consultative committee has been given the task. This will include the making of common rules for international transport including that in transit through member countries. To succeed, certain principles will have to be applied, such as the requirement that transport charges should be based on costs; that the same charges for different means of transport, irrespective of costs, should not be permitted; that domestic carriers should receive no preferential treatment; and that no discrimination should be permissible such as application of different rates for the same goods according to the country of origin or destination. Any element of protection in taxes and dues at frontiers would also have to be eliminated. One of the most difficult tasks will be consideration of deficits which are common form with most European railway systems today including Britain. In 1955, the last year for which complete figures are available, in the six countries only the Dutch and Belgian railways earned surpluses. The deficit in Western Germany was about £125 million, in Italy £39 million, and in France £58 million. Figures for 1956 so far available show that some State-owned railways, including Western Germany, improved their position but Germany still had a deficit of £43 million. To permit deficits to accrue is an obvious way in which to charge industry below cost for its transport. The elimination of deficits has defeated most railway operators and the establishment of the common market and the demand that this form of assistance to industry end cannot easily be met. The solution may well lie more in the direction of establishment of common tariffs as has been successfully achieved by the Coal & Steel Community for the products with which it is concerned.

For the present these are the problems of the signatories of the Rome Treaty; but if Britain associates itself with the European common market, as in one way or another it must, they will become Britain's concern also. A common transport policy will be equally necessary within the free trade area as in the common market if free and fair competition is to be guaranteed.

Signalling Developments in East Africa

DEVELOPMENTS taking place in signalling on the East African Railways, necessitated by the growth of the traffic, which it has become essential to handle more expeditiously and with greater safeguards against accidents, are the subject of a recent article in *East African Railways & Harbours Magazine*. With few trains, stopping at all stations, it was possible to deal with them with comparatively primitive equipment; and a home signal at each end of a station, operated by the stationmaster, without any interlocking between them and the hand-worked points, were all that was provided. That official was answerable for giving correct instructions to the pointsmen and for checking very carefully that they had been obeyed. These signals were ordinary lower quadrant

two-position semaphores, exhibiting a red or green light, and were taken from long-established British practice in such matters.

It became increasingly clear, however, that something much better was needed to meet the demands for a more frequent service and the necessity of running through trains carrying appreciable loads without the vexatious restrictions inseparable from having to slow down at non-interlocked points. It was essential to have equipment adapted to the local operating conditions and capable of providing signal aspects answering to present day needs and yet simple to read and understand.

A study of the question in consultation with the signalling industry led to the decision to use double-wire transmissions, with which much experience had been gained in other parts of Africa and certain Commonwealth countries, and which had been seen for years on many Continental railways. They enabled points to be operated at greater distances than rodding and offered such a degree of exactitude in the control of signals that three-aspect working became practicable, as had been proved in India and elsewhere. The opportunity was accordingly taken to introduce entirely new aspects formed by upper quadrant arms moving to three distinct positions, with, of course, yellow as a third signalling colour. In this way the early, very simple methods were replaced at a single step by something affording thoroughly modern facilities, while retaining mechanical apparatus well adapted to the prevailing conditions governing installation and maintenance. Some installations are now in service and others in process of completion.

An ordinary single-line station comprises a direct through line, over which movements may be made at speed under full signal protection, with a loop for crossing trains, the facing points being operated directly from the lever frame in combination with key locking for any siding points there may happen to be. Approach on each side is governed by an outer home signal, without distant in rear, thought unnecessary apparently under the conditions of visibility obtaining, with inner home at the facing points. The former operates to three positions with the aid of two levers, both of which must be reversed to produce the 90 deg. aspect. The inner home has two arms, the upper for the main line and the lower for the loop, this latter working to 45 deg. only. To give the vertical position on the upper arm the starting signal, situated in advance of the points at the other end of the station, must first be cleared. Starting signals work from 0 to 90 deg. and have no second position, while banner shaped indicators, inside the points, show from which track, main or loop, the route is set. Electric interlocking between token instruments and starting signals provides a valuable additional safeguard. At the larger stations rather more equipment is required.

There is a certain amount of double line block working; and electric power signalling is in course of installation at one place and is to be used elsewhere wherever circumstances render that desirable, combined with continuous track circuiting and other refinements ordinarily found in such cases in the United Kingdom. Colour-light signals, exhibiting the same aspects as the three-position semaphores by night, are to be employed with such equipment. Trials are in progress with an improved form of interlocking block for single-line sections, with the object of eliminating certain operating disadvantages attending the use of tokens, although from the safety point of view the latter type of working has always given every satisfaction. If the results answer to expectations this tokenless block will be extended to the busier sections where its benefits are more particularly to be felt.

In these and other ways the management of East African Railways & Harbours is losing no opportunity of giving the system an efficient system of signalling and block working, by applying types of apparatus best adapted to achieving the immediate objects sought in the most economical manner whilst offering facilities for extension on the same principles, should this eventually prove essential.

Antofagasta (Chili) & Bolivia Railway

REMARKABLE feats of management are apparent from the report of the Antofagasta (Chili) & Bolivia Railway for the year ended December 31, 1955. Mr. H. C. Drayton, the Chairman, was able to announce an improvement of £14,172 in the net receipts from the operation of the railways and waterworks compared with 1954.

Some of the principal results are given below:—

	1954 £	1955 £
Passenger receipts	342,177	831,084
Baggage and parcels receipts	64,022	153,656
Goods and livestock receipts	3,348,203	5,609,975
Total receipts	3,929,368	6,941,126
Total working expenditure	3,089,293	6,078,163

A dividend of £876,000 (£677,028 after tax) was received from the Bolivia Railway Company early in 1956 and accrued in the 1955 accounts. The Bolivian Government also received the pro rata proportion to which its 27 per cent common stock-holding entitled it. These payments were made largely out of funds, accumulated over a number of years, which became available for distribution as a result of the settlement of United States income tax matters. The payment partly offsets the net losses, after payment of the 40 per cent rental, which the company has incurred for many years in operating the Bolivia Railway Company lines and which resulted in the 5 per cent cumulative preference dividend being long in arrears. The arrears have now been paid off. The dividend of 4 per cent on the consolidated ordinary stock is the first paid on that stock since 1930. Averaged out over the 25 years, it represents only 0·16 per cent a year.

The loss on working the Aguas Blancas Railway was £11,349, compared with £10,013 in 1954. Traffic transported by that railway in 1955 amounted to 28,397 tons, compared with 20,915 tons in 1954, an increase of 35·77 per cent, mainly caused by larger shipments of sulphate of soda, petroleum, and manufactured nitrate. The improved traffic receipts were, however, more than offset by higher operating costs. The direct charge to working expenses for renewals was £33,033, and a sum of £116,967 has been appropriated from net revenue, making a total provision of £150,000. The appropriation to renewals account of the Bolivia Railway Company lines was again £20,000.

Chilean currency receipts and expenditure were converted at $560 Ch. to the £ for the months of January to October and at $840 Ch. to the £ for November and December, these being the official bank rates for those periods. The Bolivian official rate of exchange continued at Bs. 538·14 to the £ and was therefore again taken in the 1955 accounts for the conversion of Bolivian currency. Although this is the company's bookkeeping and remitting rate, internal wages and prices in Bolivia are related more to the free market rate of exchange, which increased in 1955 from around Bs. 7,300 to the £ in January to Bs. 11,300 to the £ in December and was recently in the region of Bs. 30,000 to the £. The gross receipts converted into sterling, are greatly inflated. These high figures do not reflect a proportionate increase in traffic, but are caused by the conversion to sterling, at the official rate of exchange, of the increased freight charges in local currency which have to be granted in order to help to keep pace with the even greater increases in expenditure. A surcharge on tariffs of 206 per cent was granted by the Bolivian Government in April, 1955, to enable the company to meet heavy increases in salaries, wages, and other operating costs in Bolivia. In February, July, and August, 1956, there were further large increases in salaries, wages, social benefits, and so on. These were compensated in part only by additional surcharges of 1,016 per cent on the basic rates. Even this large increase has proved inadequate to meet increased costs and heavy currency advances have been incurred from the Central Bank to meet current expenditure. The President of Bolivia has promised that the company's financial position will be given sympathetic consideration. The matter is being studied by the Stabilisation Commission set up to recommend means of checking inflation and putting the finances of Bolivia on a sound

footing; this commission is also studying the fixing of a more realistic official rate of exchange.

There was a considerable increase in the *sueldo vital* (minimum salary) for private employees in Chile. The company's workmen, who do not benefit from the *sueldo vital*, were granted an increase of 60 per cent in wages from April 1, 1955. The Chilean Government authorised an increase of 40 per cent in tariffs from April 29, 1955. An additional increase of 60 per cent in tariffs was granted from February 22, 1956, because of a further increase in salaries and wages from January 1, 1956. A law for the freezing of prices, wages, and salaries was passed in January, 1956. This has had the effect of slowing down, but not of stopping, the rise in prices and the company has already had requests from its staff in Chile for another large increase in salaries and wages.

There was a 10 per cent increase in net ton-km. in 1955 compared with the previous year. Passenger traffic in Chile showed a reduction in number of passengers carried of 10·55 per cent, but in Bolivia there was an increase of some 10·50 per cent. The most important increases in up traffic were in the tonnages of petroleum for the Chile Exploration Company, articles for the mining industry, general merchandise, and coal and coke for Bolivia. There were decreases in cereals, coal, and coke for Chilean clients, and flour. Down traffic showed increased tonnages of general merchandise, sulphur, gasoline, and low-grade ore and tin slag from Bolivia, but there were reductions in copper bars from the Chile Exploration Company establishment at Chuquicamata, copper and other low-grade ores originating in Chile, Chilean products, and tin barrilla. The development of the petroleum industry in Bolivia has continued and fuel oil is now being exported to the Argentine and Brazil and gasoline to Chile. The requirements of the country have been fully met except for aviation gasoline, which still has to be imported. The result is that the railway has lost the haulage of petroleum to Bolivia. The construction of the oil pipeline from Cochabamba to La Paz was completed towards the end of 1955 and it was put into service in March, 1956. This has meant the loss of 8,000-9,000 tons a month of oil and gasoline traffic over the Cochabamba branch and some 5,000 tons between Oruro and Viacha. It was the carriage of that additional traffic in 1955 which produced, after providing for the payment of the rentals, the exceptional net profit in that year of £102,619 in operating the Bolivia Railway Company lines.

Indian Railways' Final Budget

AN interim railway budget was presented in March, 1957, according to the usual timetable. As since then, a new India Parliament has come into being, the Minister for Railways, Mr. Jagjivan Ram, has now presented his final figures. These do not differ significantly from the previous ones. The gross traffic receipts are now estimated at Rs. 377·9 crores for 1957-58, as against the earlier estimate of Rs. 368·5 crores. The increase is to be obtained by raising the supplementary charge on freight from 6¼ per cent to 12½ per cent. As the estimate of working expenses remains unaltered, the net surplus is likely to increase from Rs. 21·43 crores to Rs. 30·83 crores.

An important feature of the revised picture of the railway finance for the current year is a tax on passenger fares, the proceeds of which will not augment the railway revenues, but will go to the general exchequer. The rate of the proposed tax is 5 per cent for distances up to 30 miles, 15 per cent for distances between 31 and 500 miles, and 10 per cent for longer distances. Monthly season ticket-holders and first 15 miles of all journeys will be exempted. The proceeds of this tax are to be devoted to the strengthening of the finances of the States (previously provinces and princely States). This will mean a departure from the time-honoured convention, first established in 1924, that the railway finances should be kept separate and distinct from the general finances of the country. Under this convention, Indian railways can retain all earnings, whether from goods, parcels or passengers, for their own purposes, after paying to the general revenues a definite fixed amount by way of dividend on the capital at charge.

While additional revenue to the extent of about Rs. 12 crores per annum will be raised by the increase in the supplementary charge, it will not go far in making up the shortfall in the funds required for the full implementation of the Indian Railways Second Five-Year Plan. The report of the Freight Structure Inquiry Committee, and its implementation by the end of the current year, as indicated by the Minister, will, therefore, be awaited with interest.

The expenditure originally proposed by the railways on the Second Plan was Rs. 1,425 crores, which the Planning Commission pruned down to Rs. 1,125 crores. Within this limit, the railways hoped to carry only about 162 million tons at the end of the Plan period, as against 181 million tons likely to be offered. To transport this, the Minister will require an additional amount of over Rs. 100 crores at the present price levels. Prices of materials generally used by the railways, particularly cement and steel, and labour costs, have, however, gone up, and this factor is likely to raise the bill by another Rs. 100 crores. Thus a sum of Rs. 200 crores, in addition to the proposed outlay of Rs. 1,125 crores, has to be found to meet adequately the rail transport requirements of the Second Five-Year Plan. The gap between demands for finance and resources will be partly bridged by the foreign exchange assistance that the World Bank has offered to the Indian railways, on behalf of which a mission, including two members of the Indian Railway Board, visited the U.S.A. to finalise negotiations, which started towards the end of 1956.

British Transport Commission Traffic Receipts

THE passenger receipts of British Railways for Period 7, the four weeks to July 14, only slightly exceeded those for the corresponding period of last year. Without further details available, no comment is possible, though the smallness of the increase is disappointing in view of the many cheap fare facilities now in force, including mid-week tickets. There is no apparent reason for the fact that, whilst London Transport railway receipts are almost the same as for Period 7 of 1956, revenue from the road services shows a rise of over 5 per cent; good weather may have encouraged bus and coach travel. The

—	Four weeks to July 14		Incr. or decr.	Aggregate for 28 weeks		Incr. or decr.
	1957	1956		1957	1956	
	£000	£000	£000	£000	£000	£000
Passengers—						
British Railways ..	12,847	12,125	+722	72,314	63,773	+8,541
London Transport:						
Railways ..	1,662	1,650	+12	12,441	11,686	+755
Road services ..	4,593	4,361	+232	32,313	29,579	+2,734
Provincial & Scottish buses ..	5,230	5,042	+188	31,637	28,880	+2,757
Ships	887	824	+63	2,894	2,698	+196
Total Passengers	25,219	24,002	+1,217	151,599	136,616	+14,983
Freight, Parcels & Mails—						
British Railways:						
Merchandise & livestock ..	7,689	7,895	−206	60,013	56,336	+3,677
Minerals	3,931	3,955	−24	29,084	28,129	+955
Coal & coke ..	9,196	9,749	−553	69,243	69,505	−262
Parcels, etc., by passenger train	3,818	3,750	+68	26,730	24,866	+1,864
Collection & delivery, etc. ..	1,058	1,015	+43	7,427	6,881	+546
Total freight, British Railways	25,692	26,364	−672	192,497	185,717	+6,780
Others*	4,501	4,444	+57	29,674	30,271	−597
Total Freight, Parcels & Mails	30,193	30,808	−615	222,171	215,988	+6,183
Total	55,412	54,810	+602	373,770	352,604	+21,166

* Inland waterways freight, road haulage, and ships.

Commission's provincial and Scottish road passenger undertakings earned only some 4 per cent more than last year.

On the other hand, ships' passenger receipts were well up on the 1956 figure—largely, probably, in respect of Continental traffic, in which motorists accompanying their cars are believed to form an increasingly important part; at £887,000 receipts compare with £604,000 for the preceding period; the extent to which these traffics are seasonal, so aggravating the operating difficulties, is shown by the steepness of the rise.

British Railways merchandise and coal class traffic receipts present a melancholy picture. At £7,689,000 and £9,196,000 respectively they are less than the £7,900,000 and £9,246,000 for the preceding four weeks, and 2·6 and 5·6 per cent down on last year's figures. The new maximum charges scheme has hardly had time to have effect since July 1. Minerals at £3,931,000 were an improvement on the £3,840,000 for Period 6, and almost the same as the corresponding figure for last year. Parcels receipts at £3,818,000 exceeded last year's amount by 1·8 per cent. None of British Railways freight and parcels traffics is in a really satisfactory state—yet. It is to be hoped that the operation of the charges scheme will lead to an improvement.

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS PERCENTAGE VARIATION 1957 COMPARED WITH 1956

	Four weeks to July 14	Twenty-eight weeks to July 14
British Railways—		
Passengers	+ 5·9	+13·3
Parcels	+ 1·8	+ 7·4
Merchandise & livestock	− 2·6	+ 6·5
Minerals	− 0·6	+ 3·3
Coal & coke	− 5·6	− 0·3
C. & D. services	+ 4·2	+ 7·9
Total	+ 0·1	+ 6·1
Ships (passengers)	+ 7·6	+ 7·2
British Road Services, Inland Waterways and ships (cargo)	+ 1·2	− 1·9
Road Passenger Transport, Provincial & Scottish	+ 3·7	+ 9·5
London Transport—		
Railways	+ 0·7	+ 6·4
Road services	+ 5·3	+ 9·2
Total	+ 4·0	+ 8·4
Aggregate	+ 1·0	+ 6·0

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Threat to Railway Modernisation

July 22

SIR,—Your July 19 editorial referred to possible pressure by trade unions for a 40-hr. week although they know that British Railways had a deficit of £16·5 million last year and that the volume of freight traffic, on which railway net income mainly depends, is decreasing. Recent happenings in the United States show the harm done by employee organisations in extorting unreasonable concessions from the railway companies. At the close of 1956 the railways entered into three-year agreements, covering more than 80 per cent of all employees, which provided for a wage increase of 10 cents an hour as from November 1, with two further advances of 7 cents an hour in November 1957 and 1958. In addition, half-yearly cost of living adjustments are to be made, beginning on May 1 this year, and the railways are to extend health and welfare benefits, at their expense, to cover dependants of employees.

These costly improvements in conditions of service follow the pattern established in some industries which pass on the enhanced cost of labour to their customers by raising prices. The railways spent two months in persuading the Interstate Commerce Commission to authorise an advance of about 5 per cent in freight rates as from January to offset the cost of their wages settlements, but in the four months to April freight revenue was only 1·4 per cent higher. Passenger, mail, and express receipts were below last year's level, while the railways were debited with heavier taxes and equipment rents. Although total operating revenues were up nearly $48 million, or 1·4 per cent, net railway operating income (earnings before charges) at April 30 was $18 million, or 5·8 per cent, less than at the same date in 1956.

Apparently the agreements with the staff were made on the assumption that during the years 1957-1959 economic activity in the States would expand beyond the record level of 1956. Instead, business in the first half of 1957 was in an uncertain mood. In 23 weeks to June 8 the U.S.A. railways forwarded 956,430 fewer wagons under load, a decrease of 5·8 per cent. The worst loss was 573,100 wagons of miscellaneous and manufactured goods; each of these wagons should have carried 31 tons of valuable traffic and earned $340 at least. Fifteen years of inflation have brought the railroads to a critical stage when month after month they have been forced to reduce the number of their employees by 54,000 on an average, or more than 5 per cent. Unless there is a sharp upturn in traffic during the last four months of the year, the number of employees throughout 1957 may fall below a million for the first time in any year since the war and many projects, which would improve train services, will be deferred until the railroads can afford to carry them out.

Yours faithfully,

R. BELL

Frognal, N.W.3.

B.T.C. Contract Procedure

July 23

SIR,—In your issue of July 19 you report the House of Commons discussion on the above subject wherein it is stated that "the Commission is known to be concerned about the present practice which it inherited from the former railway companies."

The fact is that, prior to nationalisation, the several railway companies had varying practices relating to the purchase and custody of stores. Certain of the companies, for example the L.M.S., centralised the buying and custody under one officer—a Chief Stores Superintendent, but the London & North Eastern, on the other hand, favoured the complete segregation of the functions of purchasing and custody respectively.

Under this organisation they appointed a chief officer styled "Purchasing Agent" (answerable direct to the Chief General Manager and, of course, board of directors) who in effect "was responsible, in consultation with the appropriate departments, including engineering and finance, for the preparation of tender lists and conditions of contracts and their placing for supplies of all kinds."

When the railways were nationalised the position of "Purchasing Agent" was abolished.

It is manifestly unfair, therefore, when the B.T.C. procedure, after some ten years of operation, comes under criticism to plead that it was inherited from the railway companies.

What is nearer the truth is that they selected from the varying practices of the old companies one they considered most appropriate for the new organisation—perhaps just another case of backing the wrong horse.

Yours faithfully,

CHARLES H. NEWTON

Furzefield, East Grinstead, Sussex

THE SCRAP HEAP

Case for Automatic Couplers

Three hundred and seventy-five thousand times a day in Western Germany a man must step between two wagons to uncouple them, and just as many times again to couple them.

No Cattleguard

Extract from accident telegram received from the Station Master, Mikindani:—

Brief particulars of accident:—"P.R.C. No. 2 ran over cow."

Cause of accident so far as is known:—

"Cow travelling on railway line without guard."—*From "East African Railways & Harbours Magazine."*

Centenary of Spanish Locomotive Class

We are indebted to a correspondent for the accompanying illustration of a 0-6-0 locomotive, one of 34 (out of a batch originally numbering 40) supplied to Spain from Britain in 1857; the first 20 are stated to have been delivered by the Railway Foundry (E. B. Wilson) of Leeds, and the rest by Kitson, Thompson & Hewitson, of the same town, to the then newly founded Madrid, Saragossa & Alicante Railway Company (M.Z.A.). The locomotives were designed for mixed traffic. The locomotive selected to represent the class at present bears the number 030.2013, but was formerly M.Z.A. No. 246.

The centenary celebrations cuminated in a ceremony on May 21 in the Atocha Station, Madrid, in the presence of representatives of the Ministry of Public Works, the Board of the R.E.N.F.E., and many guests, besides members of the Association of Friends of the Railway, Madrid. As a contrast to the centenary locomotive, there were on exhibition one of the 10 recently-delivered 4-8-4 express locomotives and one Co-Co electric locomotive, for 3,000-V d.c. operation, the first electric locomotive built entirely in Spain. After a speech by one of the members of the Association, the R.E.N.F.E. was presented, as a token of gratitude for frequent assistance to the Association of Friends of the Railway with a scale model of the first locomotive running in Madrid of the Madrid-Aranjuez Railway, and on the wheel splashers of the centenary locomotive was affixed a memorial plaque. The members of the Association of Friends of the Railway in Barcelona and Valencia taking part in the centenary, profited by this opportunity to constitute a National Federation of their bodies. A number of special trips were also arranged to celebrate the occasion.

Early French Railway Bridge

In connection with the electrification of the Paris-Strasbourg line, it has become necessary to remove a small overbridge 30 miles from Paris, known as the Banque de France bridge. The structure has been found to bear the inscription "Fonderie d'Orléans-Lefebvre et Cie. 1847," which is believed to prove that it is one of the oldest on the S.N.C.F. It has been suggested that this bridge should be preserved, and, as the French National Railways do not yet possess a central museum, an approach has been made to the Association Française des Amis des Chemins de Fer.

L.N.W.R. and Midland Relics on Show

Two exhibitions in which items of historic interest are featured side by side with examples of locomotives and carriages of the most modern design were arranged recently by the London Midland Region of British Railways.

One, at Liverpool Exchange station last month, was organised in connection with the City of Liverpool Charter celebrations. The other was at Leicester Belgrave Road station, to commemorate the centenary of the opening of the Midland Railway line from Leicester to London.

Among the Liverpool exhibits were the *Lion* locomotive built in 1838, a replica of the *Rocket*, and the L.N.W.R. locomotive *Hardwicke*, built at Crewe in 1892, which ran for 1,326,479 miles before it was withdrawn in 1932, and which in 1895 covered the 141 miles Crewe to Carlisle in 126 min. In contrast there was a 2,700-h.p. Co-Co electric locomotive of the type used on the Manchester to Sheffield line. Replicas of a first and third class coach of the Liverpool & Manchester Railway were shown, with modern counterparts.

At Leicester, originating point of the first component of the Midland Railway (the Leicester & Swannington Railway) the display was given an appropriately Midland flavour. Exhibits included a pre-1914 Midland restaurant car—presumably one of the famous vehicles designed by D. Bain when Carriage & Wagon Superintendent at Derby; also a Kirtley and a Johnson engine.

Railway Fisherman

At the weekend a mako shark gave a really tough battle to Keith Grand, the General Manager of British Railways, Western Region, about 20 miles off the South Cornish coast. The sea was fairly rough and it took him about 70 min. to land his fish.

His shark put up a grand fight. Three times he jumped clean out of the water—those in the boat guessed 10 ft. high.

Several times, too, he tried to get the line caught by diving under the boat.

Finally he was too heavy to be landed and was taken to Looe lashed to the thwart. There he was weighed and found to scale 254 lb. The boat was the *Claire*, which Charlie Butters skippers.

It is not the pardonable pride of the fisherman that prompts Mr. Grand to send me this story. British Railways are trying to popularise this sport. —*"Peterborough,"* in *"The Daily Telegraph."*

Sh . . . . !

(*See the Scrap Heap of June* 14)

I'm a chap with finer feelings;
And the banishment of noise,
Like roast pork and smoke abatement,
Ranks among my greater joys.
Though I like life's major moments,
Their excitement and surprise,
I am happier when the tumult
Ceases and the shouting dies.

I can manage without sirens
And those dismal ululations,
Though I like the soothing music
When I wait at railway stations.
Even there, it's more than likely
That, all set to sleep and dream,
I'll be wrenched back to existence
When an engine blows off steam.

Will the future Lords of Transport
Break the pandemonic spell
And prefer the charms of silence
To the claims of decibel?
Ah, that glorious consummation,
Soothing to the savage breast,
When the duckhorns cease from honking
And the diesels are at rest!

A.B.

One of a class of 0-6-0 *locomotives supplied to Spain from Britain in* 1857

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

NEW ZEALAND

Radiata Pine for Sleepers

More than half the sleepers used each year by the Railways Department may in future be made of New Zealand-grown radiata pine instead of imported hardwood if proposals put to the Railways Department by the Dominion Sawmillers' Federation are adopted. The Department each year uses some 400,000 sleepers. The proposal is that in future some 240,000 of these should be of treated radiata pine. The cost to the Department cannot be estimated. Annual production in New Zealand of radiata pine is 300,000,000 board feet of which about 7,000,000 would be used for sleepers.

The Railways Department is reported to have been testing treated radiata pine for durability. Tests carried out on Australian railways with New Zealand-grown treated radiata pine have shown that sleepers made of that timber have retained their serviceability for 20 years while untreated pine has failed after two or three years. New Zealand Railways Department tests will seek to show whether pine can resist decay, and whether it is mechanically suitable for sleepers; that is, whether it can hold rail spikes, withstand pressure and stress, and be free from end splits. If it is decided to use radiata pine sleepers, it is understood that they will not be laid under points systems or on curves.

VICTORIA

Rail-Road Service

The forwarding agents' bulk truck load scheme is working well, and has resulted in substantial traffic being diverted from road to rail.

Under the scheme, reputable forwarding agents were approached with a freight agreement which provided for a minimum of 1,000 tons of traffic to be forwarded between two capital cities; carriage at owner's risk; loading and unloading to be performed by the contractors concerned; and the traffic to be consigned as "one truck load of merchandise."

Railway commercial agents seeking business under this arrangement report that many new manufacturers have been opening up in areas up to 20 miles from Melbourne, and the door-to-door delivery meets all requirements. Business men welcome the opportunity of choosing a forwarding agent from the list provided and exercise that right of choice; and a forwarding agent's goodwill is stated to be an influential factor in the railways gaining the business.

During recent months forwarding agents have been forced to meet the competitive rates of road hauliers, but the fact that about £260,000 a year of Victorian Railways' revenue from railway service is derived from the scheme clearly shows its success.

Aerial view of Changamwe Marshalling Yard under construction

EAST AFRICA

Changamwe Marshalling Yard

Work has been completed on Phase I of the construction of the East African Railways & Harbours Administration marshalling yards at Changamwe, near Mombasa, main features of which are the earthworks, stormwater drainage and sewage, the new Changamwe Station and signal-boxes as shown in the accompanying illustration. The old main Mombasa-Nairobi railway track which ran to the south has now been lifted and the new section runs adjacent to the marshalling yards.

A 5,000,000-gal. storage tank for railway fuel oil, which is fed by a four-mile, 16-in. pipeline from Shimanzi deep-sea tanker jetty, has been tested and is ready for operation. A mile-long feeder rail track and spurs, which will feed the access sidings of the industrial area now under construction, runs parallel to the main works.

RHODESIA

Railways Scholarship Scheme

Rhodesia Railways have made five university scholarships available to selected student engineers. When qualified, the men will be required to return to the railway service for a period of seven years, although in certain circumstances this might be reduced.

The scholarships are valued at £300 per annum. Of the five recently awarded, two are for mechanical engineering and three for civil engineering students.

Bulawayo-Salisbury De-Luxe Service

Special inclusive fares, which entitle passengers to coupé accommodation, de-luxe bedding, an early morning tray

of tea or coffee, hot shaving water and a shoeshine service, were introduced recently between Bulawayo and Salisbury.

Until special saloons can be made available—probably in the second half of 1958—coupé accommodation in the latest steel coaches is arranged whenever possible. The service is an interim arrangement to meet the public demand for this type of accommodation, a demand which the recent sharp increase in air fares has accentuated.

The trains leave Bulawayo daily at 8.30 p.m. arriving at Salisbury at 7.45 a.m. the following morning, and Salisbury at 8 p.m. due Bulawayo 7.30 a.m.

CANADA

Northern Alberta Improvements

A $4,944,800 works and improvement programme this year has been announced by Northern Alberta Railways, which operates 925 miles of line in the province. The scheme includes delivery late this year of the line's first five diesel units. Meanwhile, the company is building a new diesel shop at Dunvegan in the Peace River area.

The general works programme includes new trackage, bridge renewal, and replacements. Additional telegraph facilities are also to be installed.

ARGENTINA

Explaining the Railway Situation

The Ministry of Transport has organised a nation-wide publicity campaign to acquaint the general public with the situation of the railways and the proposals for modernisation. It also gives figures of the incidence of the recent increases in railway charges on the costs to the public of food and other necessaries.

Diesels for General Mitre Railway

The first four of the 25 diesel-electric locomotives ordered by the General Mitre Railway from the Montreal Locomotive Company have been offloaded at Buenos Ayres.

PORTUGAL

Progress on Lisbon Metropolitan Line

Most of the tunnel construction has been completed on the Restauradores-Sete Rios section of the first phase of the Metropolitan of Lisbon underground railway, and cut-and-cover work is proceeding at several points on the line which leaves this section at Rotunda and runs to Entre Campos.

Work is nearing completion at No da Rotunda, the site of Rotunda Station and the flyover junction between the Sete Rios and the Entre Campos lines. This area includes the two-storey traction substation and the various transformer and pumping and ventilation posts.

The building for the street-level main substation at Rotunda, from which the power supplies for the railway will be taken, is nearly completed.

Much of the equipment for power supply, pumping, and ventilation has now been shipped to Lisbon by the General Electric Co. Ltd., the only British contractor in the scheme, which is responsible for the whole of these services on the sections of the line now being built. Erection is scheduled to begin in the next two months. Installation of the Pirelli-General H.T. cables and d.c. feeders and track connections will take place next year after the permanent way has been laid in the tunnel.

Deliveries are in progress of rolling stock for the line, built by Linke-Hofmann-Busch, with Siemens-Schuckert electrical equipment.

Publications Received

The Diesel Locomotive—R. L. Aston. London: Thames & Hudson Limited, 30, Bloomsbury Street, W.C.1. 7½ in. × 5 in. 116 pp. Illustrated. Price 12s. 6d. —Intended for footplate and running shed staff and diesel locomotive operators, this book describes the basic principles of the diesel engine, with an explanation of the function and operation of the auxiliary equipment found in a modern diesel-powered locomotive. The author covers the ground reasonably adequately in view of the general scope and the limited space available, and the book would prove useful, say, as textbook in conjunction with practical instruction classes; but it is doubtful whether there is enough detail, from a driver's or fitter's point of view, to achieve what is attempted. On the other hand, the layman who wishes to understand, in general terms, the basic features of this form of power unit, which will be seen in growing numbers on railways in this country will find it useful.

Two Thousandth Issue of "Modern Transport."—The many changes in surface and air transport in almost four decades since the first issue of our contemporary *Modern Transport* appeared on March 22, 1919, are featured in the 2,000th issue, that of July 27. Air transport, and the bus and road haulage industries, coastwise shipping, the docks, and railways of this country are the subject of short, but comprehensive résumés. Some well-chosen photographic illustrations may well be a shock to many who have forgotten how great have been the growth and development in all forms of transport in the past 38 years. The future prospects of rail and road passenger traffic are the subject of editorial notes. The 2,000th issue is the occasion for a number of congratulatory messages from men prominent in the world of transport. They include Mr. Harold Watkinson, Minister of Transport & Civil Aviation; Sir Brian Robertson, Chairman of the British Transport Commission, who points out that *Modern Transport* is almost a contemporary of the Institute of Transport; Lord Hurcomb, first Chairman (1947-53) of the Commission and Permanent Secretary to the Ministry of Transport in 1927-37; Mr. Francis H. Cave, President of the Institute of Transport; and Mr. C. K. Bird, General Manager of the Eastern Region of British Railways.

Safety First Technique for Fork Truck Drivers.—A folder, designed to slip into the pockets of drivers of fork lift trucks, has been produced by I.T.D. Limited, 95-99, Ladbroke Grove, London, W.11. This contains 30 safety rules drawn up to ensure freedom from accidents likely to arise with this type of vehicle. The rules are simply written and some are illustrated by thumb-nail sketches.

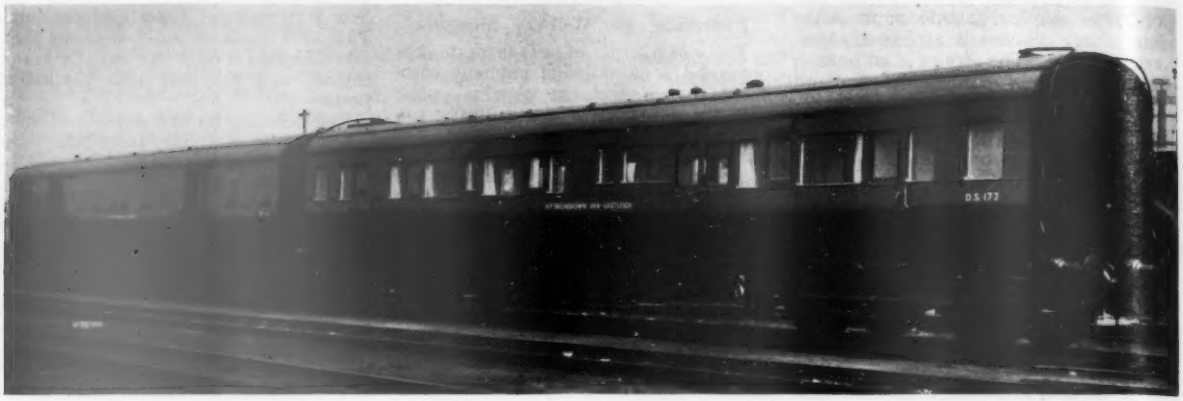
Freer Trade in Europe.—This 32-page booklet has been prepared by the Treasury and the Central Office of Information with the assistance of the Board of Trade and the Central Statistical Office. It explains the proposed European Economic Community of the six European countries, and describes how the Free Trade Area would fit in with it. It answers questions arising from the proposals and gives many facts about Western Europe—size of market, growth, trade, and wages. It contains a summary of the tariff and quota provisions of the European Economic Community Treaty (the Treaty of Rome), signed on March 25, 1957. The booklet can be obtained from H.M.S.O. or booksellers and costs 2s.

Talyllyn Railway Official Guide—This small guide describes the route of the 2 ft. 3 in. gauge railway in some detail, a feature which should appeal to visitors to the line, which was first opened for passenger services in December, 1866. A section is devoted to the history of the railway, its locomotives, rolling stock, permanent way, and operation. There is a useful map and a number of full-page photographs depicting the locomotives at work. The guide can be obtained from Towyn (Wharf) Station, or from "Brynglas," Beckman Road, Pedmore, Stourbridge, Worcs. Price 1s.

Pleasure Cruising on British Waterways. —This attractive and well-illustrated booklet is issued by British Transport Waterways to describe "Heart of England" inland waterways cruises in its converted narrow boat, the *Water Rambler*, which operates five-day cruises starting from Oxford and Birmingham. Facilities for hiring working boats converted for use as pleasure craft are also described, and there is a section dealing with day pleasure cruises, vessels for which are becoming available in all Divisions.

Southern Region Breakdown Coaches

First of standard type now in service



Equipment storage (left) and staff breakdown coaches for Southern Region

THE first of the new standard type breakdown coaches for the Southern Region, built at Lancing Works, is now in service at Eastleigh Motive Power Depot.

There are two coaches in each unit, one of which accommodates the breakdown gang when travelling to and from any incident on the track in connection with train running. A compartment of this coach is set out for officers who are responsible for re-railing arrangements.

Accommodation for Staff and Officers

Leading from this compartment there is a fully-fitted kitchen with serving hatches to both the staff and officers' accommodation. The compartment for the staff seats approximately 16 persons. Drinking water is supplied to the kitchen from a tank holding 150 gal. There are also toilets and accommodation for staff clothing. This coach is centrally heated throughout from a special boiler fitted in the kitchen. The reason for this is to ensure that the coaches are kept warm when engines have to be taken off the train for other purposes when re-railing work is in progress.

Storage of Equipment

The other coach is laid out for storage of equipment and appliances specially used for the work of re-railing locomotives and so on. In addition there is built under each coach a special compartment for holding extra heavy equipment such as Kelbus hauling tackle. This equipment can then be quickly offloaded with the minimum of physical effort. The arrangement of this compartment may be seen in the illustration.

Lighting throughout the two coaches is by propane gas contained in two tanks under each coach.

The two coaches work in conjunction with a 36-ton steam breakdown crane kept under steam day and night in readiness for any emergency and capable of lifting 36 tons at 20 ft. radius.

R.H. & D.L.R. DRIVER STRUCK BY BRIDGE.—The driver of a passenger train on the Romney, Hythe & Dymchurch Light Railway was struck on the head as the train passed under a low bridge between New Romney and Dungeness on July 23. Before becoming unconscious he was able to close the regulator, reducing the train speed. The guard, looking from the last coach, saw the driver slumped over the cab, and applied the emergency brake. The driver was taken to hospital unconscious but allowed to return home later. Capt. J. Howey, builder-owner of the Railway, was reported to have commented, "The accident was not attributable to mechanical breakdown, but apparently to failure of the human element."

Staff dining and rest compartment

Underslung compartment for re-railing and other equipment

International Passenger Services in Eastern Europe

Growth of traffic consequent on relaxation of travel restrictions

(*By a correspondent*)

POLITICAL history is often reflected in its railway timetables, and international travel routes tend to follow in the wake of political affiliations, communication between countries being broken, resumed, or increased in accordance with relations between respective governments and peoples. Seen in this light, the development of international passenger train services in Eastern Europe since the war throws light on the general political situation, as it is hoped to show in this article. The named expresses are considered first.

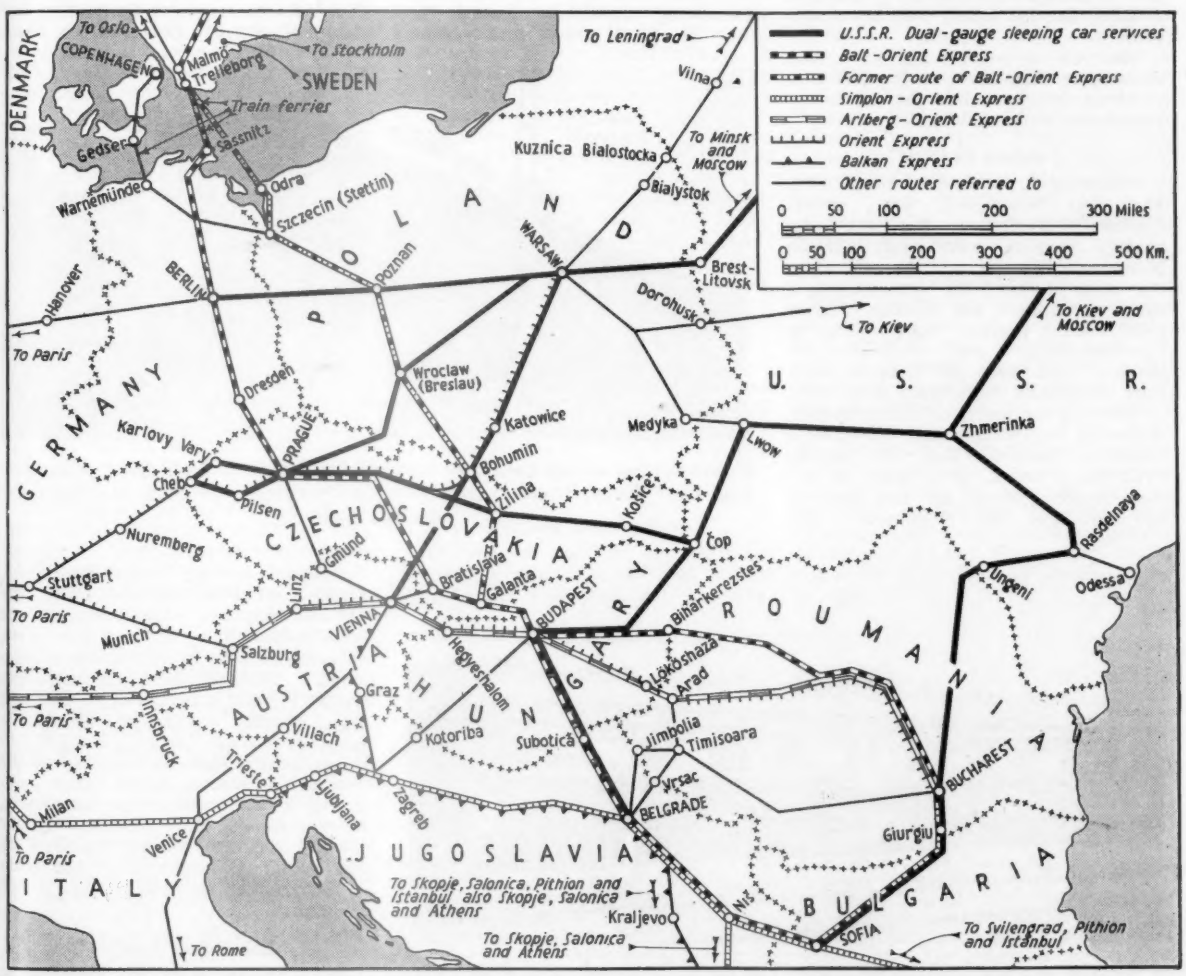
"Simplon-Orient Express"

Spanning the Continent from Calais to Istanbul, the S.O.E. is still a favourite of authors and journalists, but with the development of air travel its through traffic has declined and for much of the journey the train now consists of one sleeping car from Paris coupled to a train of local stock. For the same reason, an immediate connection is no longer made at Istanbul with the "Taurus Express" from Haydarpasa, on the opposite shore of the Bosphorus, to Ankara, Baghdad and Damascus, and through passengers for Asia Minor and beyond are obliged to spend a day or two in Istanbul.

The normal route of the "Simplon-Orient Express" passes through Belgrade, Nis, Sofia, and Svilengrad. This route was followed until 1950, but in October of that year a frontier dispute between Bulgaria and Turkey prevented the train from continuing east of Svilengrad. In April, 1951, an alternative route became available via Salonica and Alexandropolis, and although the Bulgarian route was reopened in 1953, the difficulty of obtaining Bulgarian transit visas led to the Paris-Istanbul sleeping car being diverted on certain days via Alexandropolis from 1953 until the present day, despite the 270-mile detour. The Bulgarian authorities have now agreed to relax their regulations and issue transit visas more freely, with the result that the train has reverted entirely to the original route via Sofia. The branch to Athens via Salonica was reintroduced in March, 1951.

"Balkan Express"

Introduced in May, 1955, from Vienna via Graz and Belgrade to Athens and Istanbul, avoiding Bulgaria, the "Balkan Express" is a new



Principal alternative passenger services in Eastern Europe in the 1957 *summer timetable. As the gauge of the U.S.S.R. railways is* 5 *ft., bogies must be changed at the Russian frontier stations*

Photo] [G. L. Gundry

Train for Warsaw and Prague about to leave Vienna Süd (old station), made up of Polish, Czechoslovak, and Austrian stock with a Russian sleeping car for Moscow; new Südbahnhof (since completed) in background

train. The Istanbul connection now runs via Sofia on certain days, but a service is also maintained via Alexandropolis and a record taken of passengers' preference between the two routes to determine the future itinerary of the train.

The Athens portion has now been diverted in Jugoslavia by the Kraljevo route to Skopje, a line not previously used by international trains.

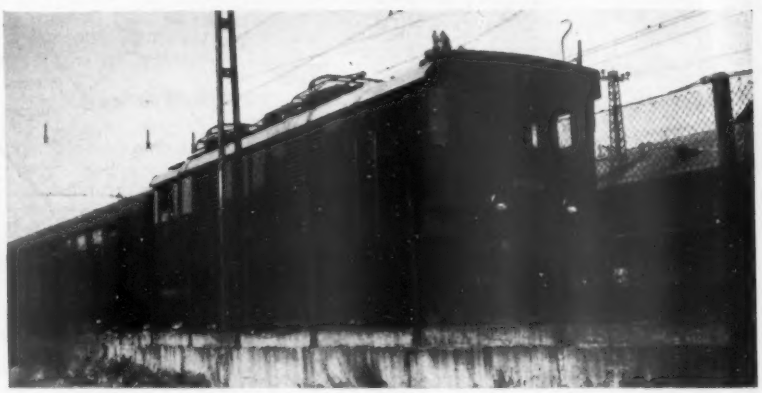
"Orient Express"

Following its traditional route from Paris via Strasbourg, the "Orient Express" divides at Stuttgart, one branch running north-eastwards to Nuremberg, Prague, and Warsaw while the other follows the old-established route to Munich and Vienna. After a promising postwar start traffic to Czechoslovakia and Poland fell sharply, and through sleeping cars were eventually withdrawn from July 1, 1951, as the result of the nationalisation of the Wagons-Lits Company's assets in Czechoslovakia. In March, 1952 (as a result, it is said, of inconvenience suffered on this journey by the late Mr. Vishinsky), the Wagons-Lits were allowed to resume the Paris-Prague-Warsaw service three times weekly, and the Paris-Prague portion of this service has become daily from June 2, 1957. The train is now being electrically hauled from Katowice to Warsaw, and ordinary coaches are available every day from Stuttgart to Warsaw, avoiding the change at the frontier station of Marktredwitz.

The Bucharest branch of the "Orient Express" followed its normal route in 1948-9, but decreasing traffic then led to its withdrawal east of Vienna. The train was re-extended to Bucharest in June, 1956, but now follows the direct route from Vienna to Budapest via Hegyeshalom instead of passing through Bratislavia, to avoid the earlier necessity of obtaining Czech transit visas. This summer, the Vienna-Bucharest section is running six times a week instead if thrice weekly as last year, this being required to handle increased traffic east of Budapest. In 1956, the average number of passengers crossing by this train from Roumania to Hungary was five times as great as the number continuing from Hungary into Austria.

"Arlberg-Orient Express"

Introduced after the first world war, partly to avoid German territory, as the "Suisse-Arlberg-Vienne Express" (S.A.V.E.) the "Arlberg-Orient Express" runs from Paris to Bucharest via Basle,



Kandö electric locomotive of the Hungarian State Railways at Györ, as used to haul the "Orient" and "Arlberg-Orient" expresses between Hegyeshalom and Budapest

Photo] [G. L. Gundry

U.S.S.R. sleeping car about to leave Vienna Süd for Moscow; the standard-gauge bogies are changed for 5 ft. gauge bogies at the Polish-Russian frontier

Zurich, the Arlberg Tunnel, Innsbrück, Vienna, and Budapest, and, unlike the "Orient Express," has continued to operate throughout the past few years, although the very small number of passengers crossing from Austria into Hungary made it necessary to combine the "express" with an all-stations suburban train from Vienna to Hegyeshalom where it was held at the frontier for several hours before continuing to Budapest. More surprising, in view of the two countries' similar political structure, was the equally long and searching inspection of the train at the frontier between Hungary and Roumania.

"Balt-Orient Express"

Begun in May, 1948, the "Balt-Orient Express" was an ambitious scheme to establish a through route from Sweden

to the Balkans avoiding Eastern Germany, which had not then been integregated into the Soviet bloc. Using a new train ferry route from Trelleborg in Sweden to the Polish terminal of Odra (Ostswine), the train continued southwards via Poznan (Posen), Wroclaw (Breslau), Bohumin, Budapest and Belgrade to Sofia, with a through sleeping car from Stockholm to Belgrade.

The breach between Jugoslavia and the other Eastern European states caused the train to be diverted in 1950 to run from Budapest to Sofia via Bucharest and the Danube train ferry at Giurgiu (since replaced by a bridge), while at the northern end the Odra train ferry was given up in January, 1954, and the route across Poland was discontinued five months later. The name "Balt-Orient Express" was then applied to the Berlin-Bucharest-Sofia service, linking five capitals but coinciding with the original route only for the 150 miles from Galanta to Budapest, while the "Baltic" connection was provided by the existing Stockholm-Berlin sleeping car service via Sassnitz. The re-establishment of normal relations with Jugoslavia brought the train back in June, 1956, to its earlier route to Sofia via Belgrade instead of Bucharest, and a through car now runs from Sassnitz to Vienna via Brno.

As the principal link between the satellite states, the "Balt-Orient Express" is the train most affected by the gradual liberalisation of travel, and had frequently to be strengthened or duplicated during the summer of 1956.

Stockholm to Warsaw and Berlin

A sleeping car service from Stockholm to Warsaw via Trelleborg and Orda Port, using a Swedish train ferry steamer, was established in 1946 and merged with the new Baltic-Orient Express two years later. From January 1, 1954, Odra Port was discontinued as a ferry terminal and the car then ran via Sassnitz, Neubrandenburg, Grambow and Stettin until June, 1956, when it was diverted via Berlin.

The sleeping car service from Stockholm to Berlin has operated since 1947, usually via Trelleborg-Sassnitz, though from September, 1947, to April, 1948, and again from October, 1952, to August, 1953, the steamers were diverted to Warnemünde. This service runs twice weekly in winter and four times per week in summer; the train runs into Berlin Ost station and passengers for West Berlin continue by S-Bahn.

The train ferry from Gedser to Warnemünde is operated primarily for freight traffic, but through passenger coaches are operated in summer between Copenhagen and Berlin, with sleeping cars on the Eastern German portion of the journey.

Connections with the U.S.S.R.

A striking feature of the past few years has been the introduction of through services with U.S.S.R. dual-gauge sleeping cars able to run on either broad-gauge or standard-gauge bogies, the first such service (Moscow-Prague) having commenced on May 1, 1951. Installations for changing bogies are provided at the frontier stations of Brest, Cop and Ungeni, and through cars run from Moscow to Berlin, Warsaw and Vienna via Brest, to Prague, Karlovy Vary (Carlsbad), Budapest and Belgrade via Cop, and to Bucharest and Sofia via Ungeni. A further through car now runs from Moscow to Prague via Brest, Warsaw and Wroclaw, but requests by the Soviet railways to run these cars to Paris and Rome have not met with any success. It will be noted from the map that Poland, Czechoslovakia, Hungary and Roumania each have a common frontier with the U.S.S.R.

Three further crossing points between Poland and the U.S.S.R. are to be reopened next June, but without through cars. These are Kuznice Bialostocka (Warsaw-Leningrad line), Dorohusk (Warsaw-Kiev line), and Medyka (Krakow-Lwow line).

Berlin-Prague-Vienna

A new feature of recent years is a fast diesel train between Berlin and Prague via Dresden. This is now extended to Vienna via Gmund, and has been given the name "Vindobona" (the Roman name for Vienna).

Sleeping Car Services

Sleeping car services to and from Western Europe are operated by the Wagons-Lits Company, but restaurant cars and all other sleeping car services are provided by the respective state railway administrations, the local operations of the Wagons-Lits Company having been nationalised in Jugoslavia and Roumania in 1948, in Hungary in 1949, and in Czechoslovakia and Bulgaria in 1950. Sleeping cars of seven different administrations (excluding Wagons-Lits and U.S.S.R. cars) may thus be seen in Eastern Europe, namely East German Mitropa, Orbis (Poland) and cars of the Czech, Hungarian, Jugoslav, Roumanian and Bulgarian State Railways. Except for the red Mitropa and dark green Orbis cars, most retain the Wagons-Lits blue livery with yellow bi-lingual or tri-lingual lettering, usually including Russian. Both new all-steel cars and ex-Wagons-Lits teak cars may be seen.

Connections with Jugoslavia

The break between Jugoslavia and the "Cominform" States in 1950 had immediate repercussions on rail services. Traffic ceased at once between Jugoslavia and Roumania and on the Budapest-Zagreb line, leaving only a skeleton service from Budapest to Belgrade and the "S.O.E." from Belgrade to Sofia. Communication with Roumania via Jimbolia was resumed in October, 1954, and the daily service Budapest-Belgrade was restored in October, 1955, followed by Budapest-Ljubljana-Venice from June, 1956. From June, 1957, the Budapest-Bucharest service will run every day, using the Vrsac route adopted last year. A second daily train will be added between Belgrade and Sofia.

Conclusion

After several years of near-stagnation in international passenger traffic in Eastern Europe, the past year has seen an increase in passenger traffic which, in the absence of effective road and air competition, has fallen almost entirely to the railways. The close co-operation between different administrations traditional on the Continent has led to plans for increased facilities for 1957, and despite the appearance of motorcoach tours it is likely that the railways of Eastern Europe will obtain the lion's share of such tourist traffic as may develop.

FACTORY AND STAFF MOVED BY RAIL.—A rapid transit removal of factory machinery by rail began on July 10 at 9.35 p.m. when a special train loaded with machinery from the Alexandria factory of Elastic Yarns Limited, a motorcar in a special truck, and 24 of the firm's staff in a sleeping-car left Dumbarton for Stapleford & Sandiacre Station in Nottinghamshire. On arrival at their destination at 7.30 next morning the workmen, who had been busy the previous day in dismantling, began the task of installing the machinery in the Sandiacre factory. This transfer by express train in one operation minimised loss in production. Many machines were conveyed in 53-ft. long covered vans but some were loaded at the Alexandria factory in British Railways road-rail containers for delivery straight into the Sandiacre factory next morning. An advance consignment of machinery in 11 containers was despatched from Alexandria the previous week.

GIFT TO BRITISH RAILWAYS.—A painting of a Dundalk, Newry & Greenore train specially commissioned by the former Lord Mayor of Belfast as a gift to British Railways, London Midland Region, was handed to Lord Rusholme, Chairman of the London Midland Area Board, by Alderman Sir R. J. R. Harcourt at a luncheon in the Euston Hotel on July 18. The former Lord Mayor was in London to receive his Knighthood from the Queen, and Lord Rusholme took the opportunity to invite him to a lunch at which the General Manager of the London Midland Region, Mr. David Blee, and other officials were present. The picture was painted by the Belfast artist Raymond Piper.

MOND NICKEL AT OLYMPIA.—The Mond Nickel Company's stand at the Engineering, Marine, Welding and Nuclear Energy Exhibition, to be held at Olympia, London, from August 29 to September 12, is designed to show how many engineering problems can be solved by the right choice of materials. Subjects covered will include corrosion resistance, surface protection, physical and mechanical properties and weldability. The materials will include spherical graphite iron in addition to a large number of nickel-containing alloys and steels.

Sloterdijk Station, Amsterdam

Modern "halt" type station to meet travel demands created by westward extension of the city

Main covered hall from station forecourt

THE growth of the western part of Amsterdam gave rise some time ago to a demand for a station, or halt, on the main railway system, which became all the more insistent when it was announced that the concession for the Amsterdam-Haarlem "Blue Line" tramway service would expire on March 1, 1956. (It was, however, extended to the end of that year.) Although bus services were to be introduced to replace the trams and provide more extensive services, it was still felt that the station would be required.

An investigation was therefore undertaken to determine the most satisfactory location for one and Sloterdijk was finally selected as being centrally situated between the old and new sections of the west end and standing at the junction between two important streets, the Admiraal de Ruyterweg and the Haarlemmerweg. In addition, space could be obtained for a good forecourt for the use of buses. Town planning proposals envisage a re-alignment of the railway to the north of the present route, when the present "halt" type of station may be replaced by a larger one of ordinary form, but at present it is very difficult to say if and when such plans are likely to be carried out.

New Structure

As shown in the accompanying illustrations, the new station is of very simple and pleasing design. This was largely conditioned by the form of certain neighbouring buildings and the upper part had to be made high enough to be recognised readily from the Haarlemmerweg. Much glass is included.

The nature of the subsoil made it essential to provide deep foundations, but the platforms are supported on piles and concrete fillers, readily changed in the event of any settlement occurring. The station buildings rest immediately on a reinforced concrete base.

The work was carried out jointly by the Municipality of Amsterdam and the Netherlands Railways, the former negotiating for the site and clearing it, providing and lighting the forecourt, re-aligning the Haarlemmerweg and constructing a bridge over the Haarlem canal, while the railway carried out the remainder, with subway under the lines, cycle park, and the required re-arrangement of the overhead traction standards and wires.

Freedom of Movement for Passengers

As most users of the station hold season or weekly tickets, doors have been dispensed with and the ticket barrier hall arranged to afford maximum freedom of movement in both directions, the booking hall being arranged as a side annexe. At holiday periods and week-ends heavy traffic to the resort of Zaandvoort has to be dealt with. The four ticket windows have hygienic speaker equipment and rotary cash and ticket delivery units on the Bollman system.

The central heating is oil-fired. Mosaic wall designs in the booking hall are by an Amsterdam artist, Miss Elga Eymer.

There are two platforms, each some 980 ft. long. The southerly one is reached by a subway and the other, for the Haarlem direction, has a waiting room with heating facilities. Daily passenger user is about 2,000, with indications of increase.

IMPROVED FACILITIES FOR TROOP TRANSITS IN N.E. REGION.—The North Eastern Region provided sleeping berths for officers as well as families, and hot breakfasts were served en route, on two special troop trains which conveyed the First Battalion of the Cheshire Regiment from Barnard Castle to Southampton on the night of July 29. The first train left Barnard Castle at 11.15 p.m., consisting of four sleeping cars, a kitchen and cafeteria car, four ordinary coaches, and two luggage vans. The second train, which left at 11.59 p.m., incorporated a kitchen and cafeteria car.

Ticket windows in annexe to main hall

ELECTRIC RAILWAY TRACTION SECTION

U.S.S.R. 50-Cycle Locomotive Practice

RECENT information on the course of 50-cycle locomotive development in the U.S.S.R. shows that the general trend towards converter systems rather than the use of single-phase traction motors is being followed in that country also. Extended trials have been carried out with a Co-Co design incorporating ignitron rectifiers. Details published in the May issue of *La Traction Electrique dans les Chemins de fer* show that the motors are arranged in two groups of three machines in parallel, each group being connected between the cathodes of two pairs of ignitrons, providing full-wave rectification, and the centre-point of the transformer secondary. This method requires a larger secondary than when a bridge connection is used, but has enabled the two sections of the secondary to be connected in parallel at starting, so that a wide range of control is available without an unduly large number of tappings. The total number of accelerating steps is 34 (including a weak-field notch obtained by diverter resistances), of which ten are running notches. An unusual feature of the control system is a time-based scheme of automatic acceleration, the driver setting the controller handle so that the notches up to full voltage in full field are passed through in 5, 3·5, 2, or 0·5 minutes. The progression can be arrested at any time by returning the handle to a "stop" position.

The temperature of the rectifier cooling water is controlled thermostatically. If it is above 35°C. it flows through a fan-cooled radiator, but if below that figure it is diverted automatically through a by-pass. Provision is made for protecting the rectifiers from the effects of very low temperatures, which are likely to be particularly pronounced on the railways of the U.S.S.R. and to lead to the problems referred to in our July 5 issue. A heating coil in the lower tank of the circulatory system, from which the water is pumped round the circuit, is switched in automatically if the water temperature falls below 25°C. and cut out when it reaches 30°C.

Running trials with the locomotive are reported to have shown a satisfactory performance of the ignitrons at all loads and speeds, with negligible occurrence of backfires. It was considered, however, that the ripple component of the rectifier current was somewhat high, being 32 per cent at the continuous rating and 25 per cent at the one-hour rating, and it was thought desirable to increase the inductance of the smoothing choke from 4 to 4·5 mH., at the same time using laminated cores for the interpoles. In contrast with this, it has been suggested recently in this country that values of ripple between 30 and 50 per cent are tolerable in order to obtain minimum overall weight. Armature temperatures were also higher than the permissible limits as a result of the harmonic content of the current, but it is not stated whether greater latitude is to be allowed in this respect by the use of class H insulating materials, as is being done in motors for the British Railways 50-cycle programme.

Two designs have also been produced for rotary-converter locomotives, both on the single-phase/three-phase system. In one scheme a synchronous motor drives a frequency changer and a d.c. generator on the same shaft, the latter supplying current to drive a motor-generator giving a three-phase output. While this machine is running up to a speed corresponding to an output at 25 c/s, the frequency-changer is not in operation, the squirrel-cage traction motors being supplied from the three-phase generator direct. On reaching 25 c/s the traction motors are switched over to the four-pole stator system of the frequency-changer, and at 75 c/s both they and the three-phase generator are connected to the eight-pole rotor. By this combination a range of frequencies up to 125 c/s is available, although the three-phase generator output has to be varied only between 0 and 25 c/s. The overall range of frequency-variation is approximately the same as in the S.N.C.F. single-phase/three-phase locomotives on the Lille-Basle line, where it extends from 0 to 135 cycles and is controlled entirely by varying the speed at which the frequency-changer rotor is driven.

The second system employed in the U.S.S.R. locomotives of this type provides frequencies up to 70 c/s by means of a variable-speed exciter feeding two series commutator machines, driven by a synchronous motor, from which the supply is taken for the squirrel-cage traction motors. The rectifier system is the most favourable with regard to cost of construction and it is considered that further economy could be achieved by studies directed to finding the most suitable traction motor voltage. At present, standard d.c. machines operating at a nominal voltage of 1,650 are being used.

Locomotives for South Africa

IN placing an order last month (see our July 19 issue) with the Metropolitan-Vickers Electrical Co. Ltd. for 135 Bo-Bo 3,000-V. d.c. locomotives of Class "5E," the South African Railways demonstrated their confidence in the modern lightweight four-axle design of medium power. The builder has had a long association with the S.A.R. electrified system and has previously supplied numbers of Bo-Bo locomotives as well as a Co-Co type. The previous Metrovick four-axle locomotives for this administration were of classes "1E" and "2E," the former dating from 1922. Both were of 1,200 h.p. and had articulated motor bogies carrying the buffing and drawgear. With only one weak-field notch in each motor grouping, they were limited to four economical running speeds. These two types did excellent work on the steeply-graded Natal lines, up to three being operated in multiple when required.

When the administration's large electrification plans for the postwar period made it necessary to acquire further motive power, 28 locomotives of 2,700 h.p. were ordered from Metropolitan-Vickers, mainly for the Reef lines, though they have been used in Natal. This new class, designated "3E," retained the articulated bogie system but had a more advanced control equipment which provided 12 economical running speeds by a combination of three motor groupings and three weak-field steps available in each. The three-axle motor bogie with articulation appeared again in the 3,030-h.p. North British/General Electric "4E" class for the Capetown-Touws River electrification, this time with pony trucks added to share the weight-distribution, but in 1955 the railways returned to a four-axle design with the "5E" class, the first 60 of which were built by the English Electric Co. Ltd. By this time it had become general practice to provide eight economical speeds or more with two motor groupings, and the flexible operating characteristics thus possible, together with the mechanical developments which have enabled the maximum effective use to be made of adhesive weight in a light four-axle design, have resulted in the class being adopted for general service although originally intended to replace the older locomotives in Natal.

The locomotives are worked in pairs when necessary, the 4,000 h.p. then available being adequate for most duties, although it may be recalled that two of the "4E" class, totalling over 6,000 h.p., are required for working trains of 1,200 tons up the 1 in 40 gradient of the Cape Western line between De Doorns and Matroosberg.

Electrification Extension in New South Wales

Completion of third stage of Parramatta—Lithgow line

Metrovick 3,850-h.p. electric locomotives in Lithgow Station

ELECTRIFICATION of the New South Wales Government Railways line between Parramatta, near Sydney, and Lithgow, in the Blue Mountains, 83 miles, was recently inaugurated by the Premier of New South Wales, Mr. J. J. Cahill, as recorded in our July 5 issue.

Before deciding to electrify, alternative methods of increasing capacity were considered. A 1,500-V. d.c. system was selected. Stages 1 and 2 were to be of the simple catenary type; for stage 3, from Penrith to Lithgow, however, a compound catenary construction was used because of the heavy currents demanded by the nature of the route. In the Blue Mountains the track rises to a height of 3,500 ft. above sea level and gradients are encountered of up to 1 in 33, while curves of down to 8 ch. radius occur.

The contract for the supply and installation of the overhead equipment was awarded by the Department of Railways to British Insulated Callender's Construction Co. Ltd., London, the work to be carried out in three stages. Stages 1 and 2, which run from Parramatta to Blacktown and from Blacktown to Penrith, were opened for service in February, 1955, and September, 1955, respectively. The gear was designed by the B.I.C.C. Group in England, and members of the traction staff of the B.I.C. Construction Co. Ltd. from the United Kingdom supervised installation.

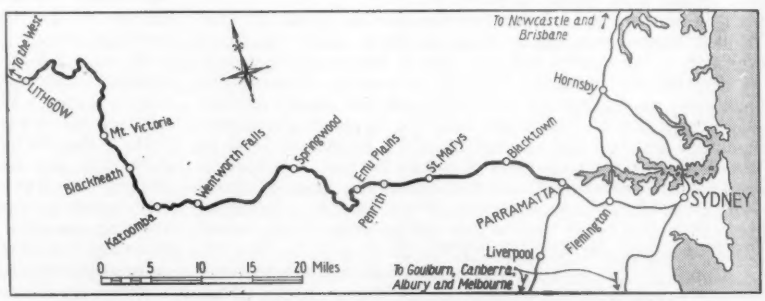
The equipment is supported in the main from portal structures fabricated in England from broad flange beams, a total of 7,000 tons of steel has been used. Most of the fittings involved were manufactured at the Prescot Works of B.I.C.C. The wires were produced in Australia by Metal Manufacturers Limited; they consist of 0·3 sq. in. cadmium copper contact wires and stranded hard-drawn copper catenary wires.

Motive Power and Rolling Stock

Passenger and freight trains are being worked by 3,850-h.p. Co+Co locomotives of the "46" class, built and in course of delivery from Britain by the Metropolitan-Vickers Electrical Co. Ltd. It is intended eventually that all passenger trains which do not run west of Lithgow shall consist of stainless-steel Budd-type multiple-unit eight-car trains being built by the Commonwealth Engineering Co. Ltd. with electrical equipment supplied by Australian Electrical Industries Pty. Ltd. and brake equipment by the Westinghouse Brake & Signal Co. Ltd.

Improved Services

As a result of electrification the times between Sydney and Lithgow are being reduced by 1 hr. for passenger and 2 hr. for freight trains.



Map showing electrified line between Parramatta and Lithgow

Heavy freight train drawn by two electric locomotives in the Blue Mountains between Mount Victoria and Lithgow

New Bogies for Netherlands Railways Electric Stock

Werkspoor design adopted in latest interurban multiple-unit sets

Werkspoor bogie for new Netherlands Railways multiple-unit trains

THE bogies in the new Netherlands Railways multiple-unit interurban trains described in our issue of May 10, 1957, differ in many important respects from the types previously used.

The design and construction of these bogies have been developed by Werkspoor N.V., Amsterdam. This all-welded construction was designed to suppress the tendency to hunting and at the same time to reduce the wear of wheel flanges and tyres to a minimum.

Preliminary trials with the new Werkspoor bogie were carried out as early as 1954, when two were fitted to a Netherlands Railways corridor coach. The results obtained led to the decision to use this type of bogie in the new electric trains, of which the supply was committed to Werkspoor N.V., which then built these train sets together with the two other Dutch coach building firms N.V. J.J. Beynes, Beverwijk and Allan N.V., Rotterdam.

Service Tests

Before this was finally decided, however, two motor bogies and two trailer bogies of the same design were built and applied to an existing two-car electric train set, in order to find out whether the same satisfactory results would be obtained in electric traction conditions as when the bogies had been used on locomotive-hauled stock. Extensive tests were made, not only with the bogies as new, but also when running with worn tyres and with axlebox guides of which the play had purposely been increased to the maximum allowed when fully worn.

Minimising Wear

Though it is generally considered necessary to re-turn the tyres after approximately 65,000 miles, so as to maintain good riding, an endeavour was made in this design of bogie to attain a considerably higher mileage before re-turning without noticeable deterioration of riding qualities.

Differences in Construction

As these tests also showed favourable results, the Netherlands Railways decided definitely to apply these Werkspoor bogies to the large series of new electric rolling stock, consisting of 47 four- and 30 two-coach train sets, totalling 248 coaches. While the bogies are in some ways similar to the the American type, there are still various very important differences in their construction. The frames and bolsters are of box-girder form and are electrically welded throughout. Normal horn-guides are fitted for guiding the axleboxes, and both boxes and guides have manganese steel liners to reduce wear to a minimum.

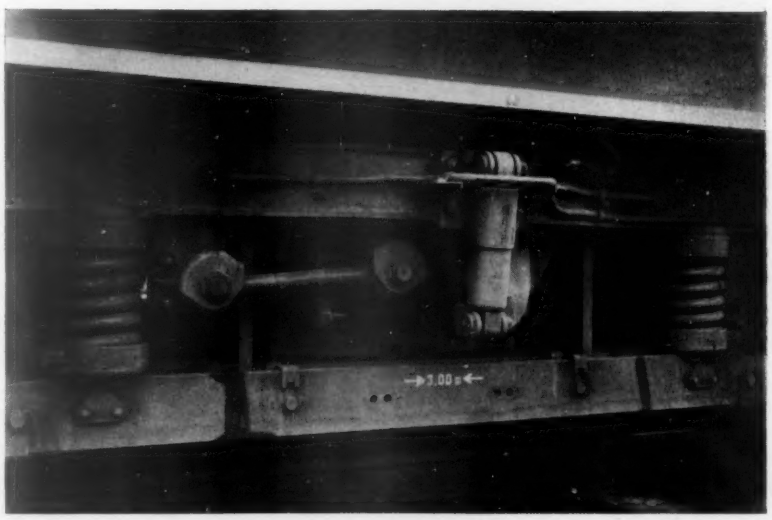
Limits of Play

The amount of play in the lateral and longitudinal directions is chosen so that the wheelsets have some freedom to adjust themselves to the right position, thus enabling the effects of minor differences in wheel diameter, such as are almost unavoidable, and small deviations which might occur in service through accidents or rough handling, to be neutralised. This degree of latitude was desirable so that the wheelsets might be accurately parallel and so avoid running at an angle to the centre line of the track, thus causing abnormally heavy wear of the flanges. The amount of play is limited to the minimum required for this purpose.

Pivot Damping

To eliminate hunting movements of the bogies as far as possible, an effective form of damping has been applied to the rotation of the bogie round the vertical axis of the centre-pivot. This results in the hunting movement of the bogie being resolved into straight components interconnected by sinusoidal curves, thus increasing the wavelength considerably, especially when the angle between the straight-line motion and the centre-line of the track decreases. This rotational damping also makes the bogie less sensitive to track irregularities, so that these are not constantly tending to set up hunting movements.

It is necessary, however, to restrict



Bogie with all-coil springing and vertical hydraulic shock absorber

this rotational damping within certain limits; excessive damping moment can cause abnormally heavy wear of flanges, so that it is of great importance for it not to be higher than is necessary for effective suppression of hunting. This can be done in various ways by applying special coupling-elements between the bogie frame and the underframe of the coach, or by making use of the friction in the pivot or the side-bearers.

In these bogies rotational damping is derived from the pivot, which is provided for this purpose with a disc of friction material without any lubrication. The dimensions have been chosen in such a way that the required damping is obtained.

Traction-link System

As the angular displacements of the bogie frame caused by hunting movements are very small, the bolster has to be connected to the bogie frame in such a way that there is no play whatever; at the same time the elastic deformations must also be reduced to a minimum. To meet these conditions the bolster is connected to the bogie frame by means of traction-links, which are provided at each end with Spherilastik bearings. These offer little resistance against angular displacements, but possess extreme stiffness in the direction of the centre-line of the traction-links, which is a necessary condition for effective suppression of hunting.

Damping Arrangements

With a view to minimising transverse accelerations of the coach body, the bolster-hangers have been made as long as possible. For the hinged joints of the hangers a so-called roller suspension has been applied at the top as well as the bottom, thus providing the maximum effective length of hanger while limiting wear to a minimum. For the damping in transverse direction, friction or hydraulic shock absorbers can be applied; the bogies built for the Netherlands Railways are equipped with Roni hydraulic shock absorbers.

The usual primary and secondary vertical springing are provided. For the primary suspension, helical springs are fitted between the bogie frame and the equalising beams, and are placed between the axleboxes. Secondary suspension can consist either of a combination of coil and laminated elliptic springs, reducing the damping to 20 per cent of that with laminated springs alone, or of coil springs in conjunction with a vertical hydraulic shock absorber. Most of the bogies are equipped with the coil-elliptic spring combination for the secondary suspension, but two of the four-car trains are provided with bogies having all-coil springing.

Now that the first of the new multiple-unit trains has covered more than 125,000 miles, and subsequent deliveries have also been in service for a considerable time, it appears that the bogies fully come up to expectations and maintain remarkably good riding qualities.

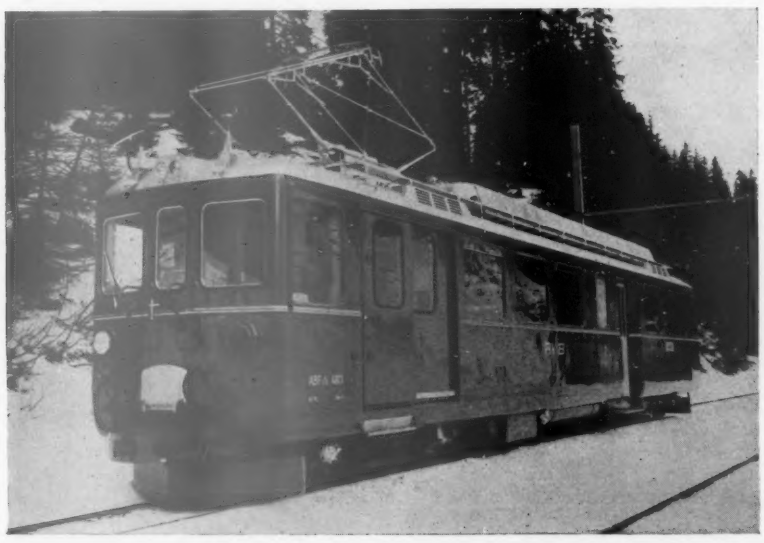
Electric Railcars for the Rhaetian Railway

Old equipment rebuilt for economy and quick delivery

RAILCARS are being introduced on the metre-gauge Chur-Arosa line of the Rhaetian Railway to replace the CC type locomotives which have been in service since 1914, and whose condition and performance no longer meet present requirements. The increase in traffic in the last few years has led to a demand for motive power units of about 800 h.p. as opposed to the former 600 h.p.

For economy and quick delivery, a thorough inspection was made of the existing locomotives to discover which parts were still serviceable, and similarly, which traction units when tested could be considered for installation in the new locomotives, as had been done when the locomotives of the Bernina, Chur-Arosa, and other lines were modernised 10 years previously.

On the same principle, the existing motors were successfully re-wound to give the higher power demanded, and after a complete overhaul, the 8-kW. 2,200/300-V. rotary transformers, built in 1930 to provide the secondary circuits for the compressor and vacuum pump, with a few parts of the wheel and airbrake assemblies, were also adopted for the new railcars. All other requirements had to be of new manufacture.



Rhaetian Railway 800-*h.p. electric railcar incorporating reconditioned electrical equipment*

Bodywork

The bodies of the coaches were built by Schlieren Wagon-und Aufzugefabrik A.G., Zurich. The two bogie assemblies each have two self-ventilated Brown-Boveri motors and pneumatic sand gear in front and behind.

The sharp curves on the Chur-Arosa line made it necessary to fit buffers, couplings, and wheel guards to the bogie assemblies at each end of the vehicle.

The bodywork is supported above the pivots upon cradle girders which are attached above leaf springs to the bogie assembly frames by swinging arms. The bogies are fitted with roller-bearing axleboxes with oil damped suspension. Four brake blocks, type MFO, each of 5,000-kg. vertical thrust power, which are arranged between the wheel assemblies, are fed by current from accumulator batteries. The bodywork is of steel construction enclosed on all sides, and treated on the inside with Isoflex for sound proofing and Aderol for heat insulation. The floor covering is inlaid.

The first class compartments are equipped with the same upholstered seats and metal fitting as in the latest lightweight trailer coaches of the Rheatian Railway, and the second class seats are similarly reproduced. Splinter-proof glass is fitted in the side windows and doors.

The baggage compartment accommo-

(*Continued on page* 136)

Lightweight Passenger Stock Development in U.S.A.

Stainless-steel car, with four-wheel bogie of revolutionary design

A LOW-SLUNG prototype stainless-steel passenger car, the Pioneer III, which, it is stated, meets all the strength and safety requirements of the Association of American Railroads, with a net weight of 595 lb. per passenger, has been designed by the Budd Company, Philadelphia. A notable feature is the lightweight four-wheel bogie with single air spring on each side (in place of the conventional double spring arrangement), with tubular axles, and outside-mounted disc brakes. The basic design is suitable for both suburban and main line stock. Bogie centres of 59 ft. 6 in. would be the same in all cases, but capacity depends on interior arrangements. The stock envisaged would be of the vestibule type 85 ft. 2 in. long over vestibules, and would include air-conditioning. The total weight in running order is 26.5 tons, compared with a normal lightweight car of 62.5 tons.

Prototype Design

Recently, the Pennsylvania Railroad placed an order with the Budd Company for six suburban coaches, the design being based on the prototype, and are taking an option on 44 more. The prototype has undergone some 55,000 miles of successful testing on the Pennsylvania system. Delivery of the first six cars is expected towards the end of this year. The Pennsylvania stock will be electric, four electric motors being fitted to each car, which will ensure an acceleration of 30 m.p.h. in 25 sec.

The principal structure of the car body is of welded high-tensile steel in accordance with Budd standard practice, but combines certain features of underframe construction. A divided centre sill is employed, two exceptionally strong members extending uninterrupted from end to end, being connected to end collision pillars. The two centre sills are connected by corrugated stainless-steel which stabilises the sill flanges, and also provides a box construction which houses electrical connections. Elsewhere the floor is covered by corrugated stainless-steel. In accordance with Budd standard practice, corrugated stainless-steel is used for the exterior side panels.

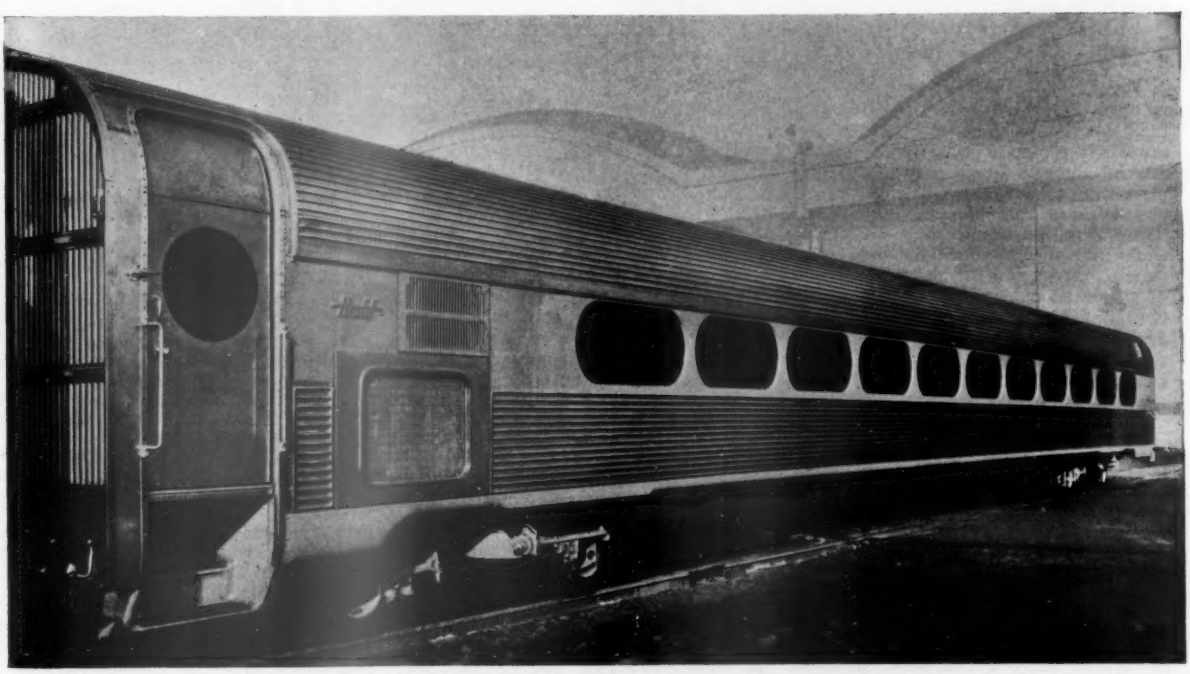
Pier panels are formed of pressings which have the double purpose of insetting rubber window mouldings to protect them from car washing machines, decreasing the total weight, and also permitting the use of light-gauge material without the use of further reinforcement. The design of roof follows the normal Budd practice in that corrugations are welded directly to Z-shaped carlines. Careful attention has been paid to sound installation. Treated fir plywood is used for the floor, but the space between the plywood floor and the corrugated steel under-surface is fitted with isocyanate foam to provide insulation and additional sound deadening.

The bogie differs considerably from one of conventional design, and shows a saving in weight of approximately 5·8 tons. Structurally, the aim was to design a bogie much lighter without any sacrifice of strength, simpler to fabricate, and easier to maintain. Mechanical design has been greatly simplified, and the conventional spring suspension has been replaced by a new type of air suspension. The principal parts of the bogie are the side frames, bolster, and two air springs; there are no equaliser beams, springs, swing hangers, spring plank, or transom.

Side Frames

The air springs work in conjunction with a large reservoir contained in the bolster beam, and which serves to soften the rate of the air spring. The spring and reservoir are connected by an orifice to restrict the passage of air between the two. This results in a spring with a variable rate and built-in damping, which varies according to the frequency and displacement of the air spring. The side frames, formed of two stampings welded together, articulate around the centre pivot bearing attached to the bolser beam; the side frames carry the roller journals mounted on the inside of the wheels.

The design permits the use of lighter axles and the more accessible installation of disc brakes on the outside of the wheel. The air springs are mounted directly on top of the bolster beam to which they are attached. They engage pockets in the car body bolster immediately adjacent to the side wall. Distortion of the air springs provides for all



Low-slung passenger coach developed by the Budd Company. The interior is of moulded plastic

Interior of prototype car showing the seating arrangements and the moulded luggage rack

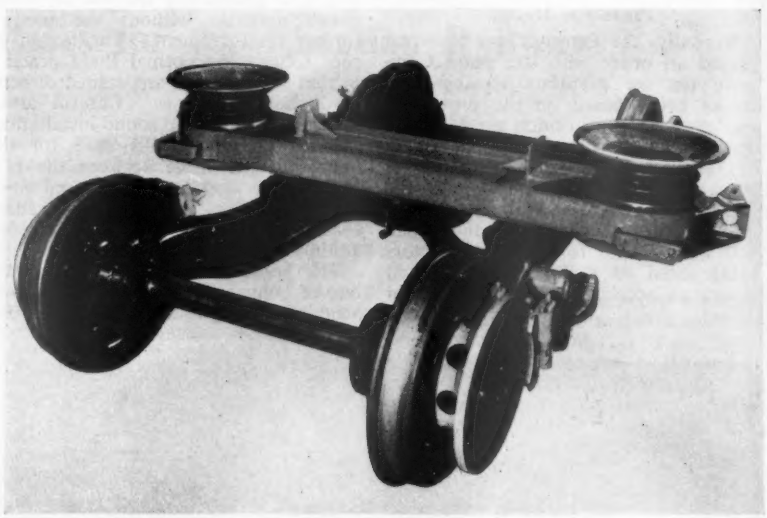
vertical and lateral bogie deflections. The Budd Company has developed laminated reinforced plastic for air ducts and interior panels because of lightness, and the ease with which such materials can be moulded, and full use is made of reinforced plastic in the design of the lightweight car. At each bay of the coach section a single panel extends from the heater guard to include window trim and lower portion of the luggage rack, while a second panel combines the upper surface of the luggage rack, the ceiling, and half the air duct. Panels are connected between each window with a single extruded aluminium moulding.

Use of Plastics

The desired colour is built into the panels, which have a hard wearing surface; where repairs are necessary, panels are easily replaced. Interior partitions are of micarta-faced plywood which is resistant to wear. A single reinforced plastic piece combines the outer wall lining with the hopper and washbasin enclosure, and provides for towel dispenser, mirror and so on; the hopper is of plastic construction. This assembly is mounted as a unit, piped and wired. Piping, with the exception of that carrying hot water from the electric heater mounted under the washbasin, is of vinyl plastic, with immunity to freezing, and of sufficient flexibility to expand with the formation of ice. The water tank is located immediately above the lavatories and is of laminated plastic construction for lightness and because of the special shape required. Use is also made of laminated plastics for doors, vestibule ceiling panels, exterior door inner panels, air ducts, enclosure around the air conditioning, and seating. Fixed, semi-bucket type seats with vinyl foam cushioned upholstery are used; these can be easily removed for cleaning. A single-moulded reinforced plastic forms the seat proper, which is designed to give added strength. The unit is mounted on a light seat base consisting of aluminium tubes welded to an aluminium wall bracket and seat pedestal. Upholstery is attached by a clip at the top, and by concealed straps passing under the seat for easy removal; a pair of seats complete with base and upholstery weighs 47 lb.

Air-conditioning

Air-conditioning equipment is located in a cabinet at the vestibule end, the condenser and fan being arranged to swing outward for maintenance purposes. The car is heated, and New York Air Brake Company type LWE electric pneumatic straight air system is used. The car is intended for operation with either a locomotive fitted with auxiliary power, or with power car which would enable a standard locomotive to be used.



Bogie of prototype stock, showing the design of springing and arrangement of brake gear

Electric Railcars for the Rhaetian Railway

(*Concluded from page* 134)

dates mail and houses various items of electrical equipment. In the cab the control panel is situated on the right, and the operating board and hand-brake is on the left. The individual switch steps are operated by means of electro-pneumatic servo-mechanisms, supplied and installed by the S.A. des Ateliers de Sécheron, Geneva. There are 32 control positions and 14 brake stages. At 2,200 V. the rotary transformer comes into action, and part of the current passes through a 2-kW. generator to charge the 30-cell alkaloid accumulator batteries, which are installed beneath the bodywork. The battery serves numerous subsidiary circuits, the control circuits of the E.P. servo-mechanisms, the main headlights, and compartment lighting.

R.H.A. Statement on Nationalisation.—In a statement issued on July 19, the Road Haulage Association declared that the reference in the Labour Party statement to the restoration of public ownership of long distance road haulage was unrealistic. The modified scheme of denationalisation carried out by the Conservative Party merely enabled the B.T.C. to get rid of the less profitable sections of road haulage, and ensure a more efficient and effective undertaking under the Commission's control.

RAILWAY NEWS SECTION

PERSONAL

The members of the Economic, Technical, & Goodwill Mission to Canada, which recently returned to this country and is referred to editorially this week, were as follows: Mr. J. M. Storey (Leader): Dewrance & Co. Ltd.; Mr. G. L. Hancock (Deputy Leader): David Brown Industries Limited; Mr. A. A. Kaye: British Thomson-Houston Export Co. Ltd.; Mr. S. J. Harley: Coventry Gauge & Tool Co. Ltd.; Mr. S. W. Hoskins: I.V. Pressure Controllers Limited; Mr. R. J. Anderson: Imperial Chemical Industries Limited, Metals Division; Mr. E. C. Whiteley: Metropolitan-Vickers Electrical Export Co. Ltd.; Mr. G. R. Guest: F. Perkins Limited; Mr. R. C. Bird: Petbow Limited; Mr. A. V. Flagg: Steel Equipment Co. Ltd.; Mr. A. J. Banks: Winn & Coales Limited; and. Mr. A. G. Ellison: Yorkshire Copper Works Limited.

Mr. R. W. Meredith

Mechanical Engineer, Great Northern Railway (Ireland) 1951-57

Mr. H. E. Wilson

Appointed Mechanical Engineer, Great Northern Railway (Ireland)

Mr. R. W. Meredith, Mechanical Engineer, Great Northern Railway Board, who, as recorded in our issue of June 14, has retired, was educated at Aravon School and at the Royal College of Science in Ireland, where he was awarded an industrial bursary for two successive years by the Royal Commissioners for the Exhibition of 1851. He entered the service of the Great Southern & Western Railways in 1912 as a pupil of the late Mr. R. E. L. Maunsell, at that time Chief Mechanical Engineer to the company. In March, 1916, Mr. Meredith received a commission in the R.A.S.C., and served three years as a Workshops Officer in a mechanical transport section attached to siege artillery on both the French and Italian war fronts. In 1919 he returned to the Great Southern & Western Railways as Materials Inspector, and became Locomotive Running Assistant to the Chief Mechanical Engineer in 1922. After the formation of the Great Southern Railways group, Mr. Meredith was appointed Assistant Works Manager at Inchicore, and joined the Great Northern Railway (Ireland) as Works Manager at Dundalk in 1926; he became Assistant Mechanical Engineer & Works Manager in 1939. He was appointed Mechanical Engineer on January 1, 1951, the position from which he has now retired.

Mr. Howard G. Grayston has been appointed Assistant Vice-President, Operation, Canadian National Railways.

Mr. H. E. Wilson, Assistant Mechanical Engineer, Great Northern Railway Board, who, as recorded in our issue of June 14, has been appointed Mechanical Engineer, will in this position be responsible for the Board's Locomotive, Carriage & Wagon Department, Locomotive Running Department and Electrical Department, also the road motor and passenger and freight fleets. He began his mechanical engineering apprenticeship in the Board's Works at Dundalk in 1914, and was transferred to the Drawing Office in 1919, appointed Leading Draughtsman in 1922, Chief Draughtsman in 1934, Chief Draughtsman and Assistant Works Manager in 1945, and Assistant Mechanical Engineer in 1951. Mr. Wilson was responsible under the Mechanical Engineer for the design and inspection of all new rolling stock including locomotives and railcars built or purchased by the Board also for the design of all diesel railcars supplied to the County Donegal Railways Joint Committee, which was the first railway in the British Isles to operate a regular passenger service by diesel railcars.

Mr. R. Hayes, Vice-President & General Manager, Atlantic Region, Canadian National Railways, who, as recorded in our July 26 issue, has retired, was born in Halifax, and joined the C.N.R. in 1915 as a clerk in the operation department at Moncton. He advanced successively to Secretary to the General Manager of Eastern Lines, Assistant Chief Clerk, and Chief Clerk to the Vice-President, Toronto. His first senior appointment was as Superintendent of the Hornepayne Division in 1938, and he later held the same position on the St. Thomas Division in 1941, the Ottawa Division in 1944, and the Montreal terminals and St. Jerome Division in 1946. He was appointed General Superintendent of the Northern Ontario District at North Bay in 1948 and of the Montreal District in the following year. In 1950 he was

Mr. R. B. Temple
Appointed Traffic Manager, Sheffield, Eastern Region

Mr. H. W. Graham
Appointed Traffic Manager, Lincoln, Eastern Region

Mr. E. McClelland
Appointed District Operating Superintendent, Darlington, N.E. Region

appointed General Manager of the Central Region at Toronto, and in 1953 Assistant Vice-President of the system at Montreal. His appointment as Regional Vice-President & General Manager came in June, 1954.

Mr. R. B. Temple, District Goods Manager, Sheffield, Eastern Region, British Railways, who, as recorded in our March 8 issue, has been appointed Traffic Manager, Sheffield, entered the service of the North Eastern Railway in March, 1911, and after experience at various stations, was appointed to a position in the General Manager's Office, York, in June, 1920. He became Stationmaster, Pickering, in January, 1928, Stationmaster, Hatfield, in February, 1931, and Stationmaster, Southend (Victoria), in November of the same year. Mr. Temple returned to York in September, 1933, as head of the Canvassing & Development Section of the Goods Manager's Office and in March, 1939, was appointed Assistant District Goods Manager, Leeds. From September, 1939, he was Acting District Goods Manager, Leeds, until moving to Lincoln as District Goods & Passenger Manager in October, 1943. He was appointed District Goods Manager, Leeds, in April, 1946, and District Goods Manager, Sheffield, in June, 1947. This post was re-designated District Goods Superintendent, Sheffield, in July, 1950, and reverted to the title of District Goods Manager, Sheffield, in January, 1955.

British Railways, Western Region, have announced the appointment of Mr. W. J. Hartnell as District Commercial Manager, Newport (Mon.)

British Railways, Southern Region, have announced the appointment of Mr. R. P. M. Wormal as Assistant Divisional Shipping Manager, Dover.

The following appointments have been announced by the Canadian Pacific Railway: Mr. D. F. Haney to be Engineer of Standards & Methods; Mr. B. B. Woodland to be Assistant Engineer of Motive Power.

Mr. J. R. Kimpton, Assistant Vice-President, Personnel, Canadian Pacific Railway, has retired after 43 years of service. He is succeeded by Mr. S. M. Gossage, Manager of Labour Relations.

Mr. H. W. Graham, District Commercial Manager, Lincoln, Eastern Region, British Railways, who, as recorded in our March 8 issue, has been appointed Traffic Manager, Lincoln, entered the service of the North Eastern Railway in April, 1916. After experience at various stations and in the District Goods Manager's Office, Newcastle, he was appointed to a position in the Goods Manager's Office, York, in July, 1933. He moved to the Divisional General Manager's Office, York, in September, 1938, and became head of the Traffic Section in January, 1942, and head of the Works Section in May, 1944. He was appointed Acting Assistant District Passenger Manager, York, in July, 1945, and Assistant District Goods Manager, Leeds, in August, 1946. He moved to Lincoln in October, 1947, as District Goods & Passenger Manager, the position being re-designated District Commercial Superintendent, Lincoln, in April, 1950, and District Commercial Manager, Lincoln, in January, 1955. Mr. Graham was Secretary of the L.N.E.R. Goods & Mineral Managers' Conference in 1937 and Secretary of the L.N.E.R. All Line Post-War Development Committee, dealing with passenger problems, in 1943.

Mr. B. G. Houseman, Managing Director of Houseman & Thompson Limited, is at present on a business trip in Finland.

We regret to record the death, at the age of 47, of Mr. R. E. A. Goode, District Manager in Nottingham of the Dunlop Rubber Co. Ltd., tyre depot.

Mr. E. McClelland, District Operating Superintendent, Hull, North Eastern Region, British Railways, who, as recorded in our July 26 issue, has been appointed District Operating Superintendent, Darlington, joined the North Eastern Railway at Tyne Dock in 1917 and after occupying positions at Washington, Sunderland, York, and Newcastle, became Assistant Controller in the Main Line Control at York in 1931. Later he became District Trains Inspector at York and subsequently Senior Freight Trains Clerk in the District Operating Superintendent's Office at York. In 1940 he was appointed head of the Operating & Commercial Joint Transit Section at York Headquarters, and later became Deputy Chief Controller in the York District Control, becoming Senior Trains Clerk & Chief Controller in the same office in 1942. Mr. McClelland was appointed Assistant to the District Operating Superintendent, Newcastle, in 1943 and Assistant District Operating Superintendent, Sunderland, in 1950. In 1954 he was appointed Assistant District Operating Superintendent, Darlington, and later became Assistant (Productivity) to the Chief Operating Superintendent, York. Last year he was appointed District Operating Superintendent, Hull, the position he now vacates.

The late Mr. René Dugas, whose death was briefly recorded in our July 5 issue, was Directeur des Etudes Générales of the French National Railways, a position he had held since the beginning of 1947. He passed out of the Polytechnique into the Corps des Mines shortly after the first world war; but it was not until 1930 that he entered railway service on the Paris-Orleans Railway. Later he became Chief of Traction on the combined P.O.-Midi system, subsequently, largely because of his forward and progressive views, Head of the Division des Etudes du Service de l'Organisation Technique of the S.N.C.F. in 1939. He was confirmed as Directeur after the end of the war, and his duties included not merely the study of theoretical or design matters, but the examination of such questions as the rationalisation of construction and work programmes, the initiating of what amounted to cost-accountancy methods to obtain the price of heavy repairs, productivity research, and general problems connected with electric and diesel traction.

We regret to record the death on June 10 of Mr. A. Parmantier, Directeur du Matériel et de la Traction, French National Railways from 1947 to 1956. After leaving the Polytechnique, he joined the P.L.M. Railway in 1921, and, by 1929, had become Chief Assistant to Mr. Vallantin, then Chief Engineer of Material & Traction. In this capacity he was associated prominently with the 2-10-2 locomotives with inside

Mr. J. K. Firth

Appointed District Goods Superintendent, Newcastle, N.E. Region

Mr. F. A. Benger

Chief of Motive Power & Rolling Stock, Canadian Pacific Railway, 1953-57

Mr. L. B. George

Appointed Chief of Motive Power & Rolling Stock, Canadian Pacific Railway

coupling rods, the streamline Atlantics, and the great improvements to the Pacific and 4-8-4T engines, and also with the introduction of diesel traction on the P.L.M. culminating in the two 4,400-h.p. locomotives of 1937. On the formation of the S.N.C.F. in 1938, and after the retirement of Mr. Lancrenon, Mr. Parmantier became Chief of Material & Traction on the Region du Nord, and remained in that position during the difficult war years. Appointed Directeur of the department on the S.N.C.F. in 1947, he was for the next nine years responsible for the complete modernisation of French motive power, and the exceptional performances obtained with the 1,500-V. d.c. electric locomotives, and the many classes of diesel locomotives and railcars.

Mr. J. K. Firth, Assistant District Goods Manager, London (Broad Street), North Eastern Region, British Railways, who, as recorded in our July 26 issue, has been appointed District Goods Superintendent, Newcastle, joined the service of the London Midland & Scottish Railway at Harrow in 1935 and after experience at various stations in the London district was selected as a traffic apprentice in 1937. His training was interrupted by the war and from 1940 to 1945 he served with H.M. Forces, mainly in the Middle East. In 1946 he was appointed Acting Goods Agent at Oldham and in 1947 became Goods Agent at Willesden. In 1950 he was appointed Goods Agent at Reading and in 1952 Goods Agent at Leeds Hunslet Lane. In 1954 Mr. Firth served on the Chief Regional Officer's Productivity Committee in the North Eastern Region. In 1955 he was appointed Assistant District Commercial Superintendent, Hull, and later the same year was promoted to Assistant District Goods Manager, London (Broad Street), the position he now vacates to take up his new appointment at Newcastle.

Mr. D. Blank and Mr. C. P. Choularton have been appointed additional Directors of A.B.C. Coupler & Engineering Co. Ltd. Mr. R. C. Yablon has been appointed an alternative Director to both.

Mr. Daniel W. Cameron has been appointed Vice-President, Manufacturing, of Montreal Locomotive Works, Limited.

Mr. F. A. Benger, Chief of Motive Power & Rolling Stock, Canadian Pacific Railway, who, as recorded in our July 19 issue, has retired, was born in 1892, and educated at public and high schools in Port Arthur, and at Queens University, Kingston, Ont., from which he graduated as a Bachelor of Science in mechanical engineering. He joined the railway in 1911, and has witnessed many of the rapid developments, including the increasing use of diesel power and decreasing use of steam locomotives which have taken place since he became a machinist's apprentice at Angus Shops in Montreal. Before taking over his last position, in 1953, he was Assistant Chief of Motive Power & Rolling Stock from January, 1948. Mr. Benger was Assistant Mechanical Engineer from 1923 to 1941, and Acting Chief Mechanical Engineer from that date to 1946, when he was appointed Chief Mechanical Engineer. From 1914 to 1916, he was attached to the Dominion Arsenal and Imperial Munitions Board.

Mr. J. H. Buchanan of Thos. Cook & Son Limited is retiring at the end of the month after 50 years of service. For the past 16 years he has been Transport Officer in the Palace of Westminster, and to mark the occasion he was presented with a cheque subscribed to by the members of all parties, at a presentation ceremony held in the Conference Room of the House of Commons on July 23. Among those who attended the presentation were Mr. Stanley Adams and Mr. Charles Holt, Chairman and General Manager of Thos. Cook & Son Limited. The following day Mr. Buchanan was a guest at the Queen's Garden Party at Buckingham Palace.

The first and second places in the first examination set by the Institute of Travel Agents—see also news paragraph in this issue—were taken by Miss B. A. Lacey, to whom a cheque for £15 was presented by Mr. G. W. E. Fortune, Chairman of the Institute, and Mr. P. O'Gorman, to whom a cheque for £7 10s. was presented. Both Miss Lacey and Mr. O'Gorman are of Thos. Cook & Son Limited.

Mr. A. J. Dillingham has resigned from the board of F. Perkins Limited.

Mr. L. B. George, Assistant Chief of Motive Power, Canadian Pacific Railway, who, as recorded in our July 19 issue, has been appointed Chief of Rolling Stock & Motive Power, entered C.P.R. service as a shop messenger at Vancouver in 1910. He served overseas with the 72nd Battalion (Seaforth Highlanders) in the 1914-18 war, was wounded on the Somme, and worked in Woolwich Arsenal from 1917 until his repatriation to Canada in 1919 when he resumed his railway training as machinist apprentice at Vancouver. He served as Locomotive Foreman at Kamloops, Shop Foreman at Vancouver and Calgary, and Assistant Foreman, Motive Power, at Winnipeg, returning to Vancouver in 1936 as General Locomotive Foreman. He was Division Master Mechanic at Lethbridge when, during the 1939-45 war, he was given leave of absence to engage in special work for Canadian Associated Aircraft Limited, and later to serve as Supervisor of Aircraft Production for the Department of Munitions & Supply. He returned to C.P.R. service in March, 1942, as Works Manager of the company's Weston Shops in Winnipeg, was promoted to Assistant Superintendent of Motive Power, Western Lines, in 1946. Mr. George came to Montreal as Assistant Chief of Motive Power for the system on January 1, 1948.

British Railways, London Midland Region, announces the following staff appointments:—

Mr. N. Richardson to be Assistant to Commercial Officer (Planning), Euston.

Mr. W. O. Reynolds to be Assistant (Passenger Services), Euston.

Mr. D. M. Howes to be Assistant (Freight Services), Euston.

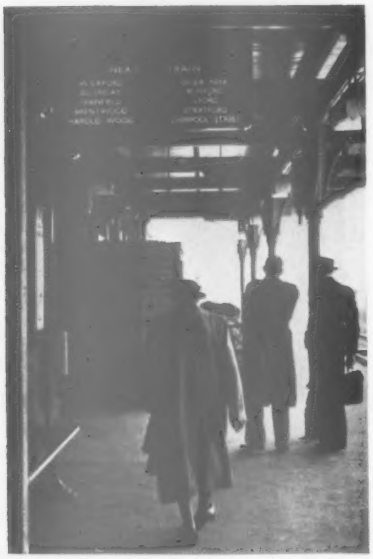
Mr. C. R. Bennett to be Assistant (Modernisation), Euston, located at Crewe.

Mr. J. E. Whitehouse to be Regional Welfare Officer, Euston.

We regret to record the death on July 29, at the age of 70, of Mr. L. K. Brindley, consultant to the president of the International Nickel Company of Canada, Limited.

Mr. A. D. Mackay, who was recently appointed to the Board of Associated British Engineering Limited as director for Development & Co-ordination, is at present on a business tour of North America.

NEW EQUIPMENT AND PROCESSES



Illuminated Train Indicators

SEVERAL applications of fluorescent tubes to station platform indicator lighting have been specially designed recently in connection with the introduction of new British Railways train services. An example is illustrated, of an installation at Rayleigh Station on the Eastern Region Shenfield-Southend electrification extension. This uses 2-ft. 20-W. tubes inside a double-sided box sign. The station names are stencilled on three-ply Cobex panels so as to appear in blue on a black ground. There is a separate bank of tubes for each face of the sign, so that when the sign is viewed from either side the names are seen in the same relative positions.

A "next train" heading is illuminated when the main switch is closed, but the station name tubes are switched in individual pairs; the filaments of these tubes, however, are heated permanently while the main switch is closed.

The interior of the sign is divided into light-proof compartments. The faces hinge upwards and can be supported by struts in the open position when it is necessary to have access to the lamps or to remove the gear trays.

A further design which has been supplied is a larger single-sided sign constructed on similar principles. This, in addition to showing the stations served, incorporates a roller blind departure time indicator illuminated by a fluorescent tube, and three platform number panels each lit by a tungsten lamp.

Particulars of signs for individual requirements are obtainable from the manufacturer, the General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2.

Steel Section Bending Roller

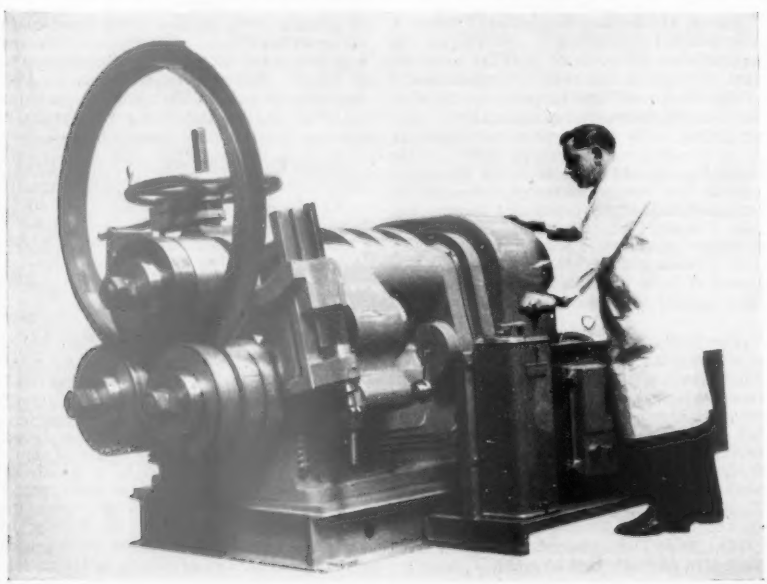
A HEAVY duty section bending roller, designed for the accurate circle, segmental and spiral bending of all types of angles and sections, appears suitable for application in the construction of structural steel work, millwrights' work and so on. Examples of the machine's capacities are: channels, flange out, 9 in. x 3½ in. x 22·27 lb.; flats, on edge, 4 in. x 1 in., on flat, 9 in. x 1¼ in. Minimum bending diameters range between 18 in. and 60 in., depending on the type of section and the material of which it is made.

The machine is of the pyramid type, employing three bending rollers, two lower, on fixed centres on the same elevation, with a third mounted above and between them. All rollers are driven, and the upper, which is counterbalanced by an adjustable weight, has a handwheel for vertical adjustment and a hand lever ratchet for use during bending.

The main housing is a single, semi-steel casting incorporating front and rear shaft bearings; the machine is mounted on a fabricated steel base, heavily braced to prevent distortion. The rollers and shafts are alloy steel forgings. A guide roller, adjustable radially to accommodate varying diameters of work, is carried by a bracket on each side of the main rollers. A further adjustment, on a line parallel to the leading roller shafts, enables the guide rollers to be used to counteract any tendency of the material to twist during bending. The angle rollers are supplied with a slot which is adjustable for width, to accommodate one leg of the angle.

A special attachment for bending angles "leg in" is also fitted. The machine is driven by a directly-coupled electric motor with drum-type controller mounted on a frame extension, affording the operator maximum control over both the machine and the work. The 20-h.p. motor, which runs at 720 r.p.m., is supplied for 400-440 V. three phase, 50 cycles.

Full details can be obtained from the manufacturer, F. J. Edwards Limited, 359-361, Euston Road, London, N.W.1.



Lightweight Drafting Machine

THE Transverse drafting machine recently developed, which can be used with equal facility in any position of the drawing board, is of application to railway drawing offices. The disadvantages of the heavy counterbalances and inaccuracies of linkage of arms sometimes associated with conventional drafting machine designs are stated to be overcome by this product.

The Transverse design consists of a vertical slideway carrying the drafting head across the board. The vertical arm is controlled, top and bottom, from the rear of the board by a steel wire cable running in ball race-mounted grooved rollers. Another advantage of the unit is that there is no restriction to the size of board with which one machine may be used.

The design, with its lack of protruding arms and large counterbalance weight, is stated to be very suitable for a back-to-back drawing office layout.

The basic price of the Transverse drafting machine, excluding scales, suitable for all sizes of drawing board, is £30. Details, including delivery, may be obtained from the Angula Engineering Co. Ltd., Pembury Road, Clapton, London, E.5.

British Electric Traction

The bus strike—a retrograde step; widening sphere of interests; Mr. H. C. Drayton's address

The sixty-first annual general meeting of the British Electric Traction Co. Ltd., was held on July 25 in London.

Mr. H. C. Drayton, Chairman of the company, in the course of his address said:—

The Group gross profit for the year is £5,059,000. After taxation the Group net profit is £2,140,000 as against £1,910,000 last year. The proportion attributable to our company is £1,769,000. The directors are recommending a dividend of 25 per cent on the deferred stocks as against 22½ per cent last year, and after providing for dividends on the preference, preferred and deferred stocks there is a balance attributable to this company and retained by the subsidiary companies, together with the amount to be added to our company's undivided profits account, of £601,000.

United Kingdom Bus Companies

The bus companies have experienced a particularly difficult year. The bad summer of 1956 adversely affected revenue. In November, 1955, there was a substantial increase in wages, and in November, 1956, there was a further increase which resulted from negotiations between the trade unions and ourselves. Nearly all the companies were forced during the year to seek increases in their fares. In December, 1956, owing to rationing of fuel oil, we had to cut our services and we also had an increase of no less than 1s. a gallon in the fuel tax. If the usual machinery for obtaining an increase in fares had applied, this would have been a body blow, but it was heartening to know that the Government acknowledged the injustice and introduced special legislation to allow the bus companies to increase their fares immediately within defined limits and I think it can be said that all companies acted reasonably and properly in exercising the discretion they were given. I can only hope the Government, having recognised the difficulty of our position in this particular case, will allow us, when future increased costs are put upon us, to adjust our fares at once and wait for them to be confirmed or varied before the Traffic Commissioners as soon as possible.

Negotiations with our employees in the matter of wage adjustments, either up or down, have hitherto been conducted in an orderly way, and for the last 17 years, if we could not reach agreement, the matter went to arbitration and both sides accepted the award of the arbitration tribunal. This had worked in a satisfactory way—sometimes the employees have felt they had not got enough, and sometimes the employers thought the employees had got too much. But both sides, being civilised people, have accepted the decision, whatever it may have been, as a fair and equitable one. This method of submitting differences of opinion to an arbitration tribunal has served our industry well throughout this period, and it is one of the things the politicians of the whole world have been striving for a great many years—that is, that international differences should go to arbitration and that both sides should accept the decision so given. It is a step forward in the conduct of human affairs and one which shows we are striving to be a civilised people. Any step that reverts to the use of force is a retrograde step towards barbarism and the law of the jungle.

At the end of last May our friends the trade unionists, with whom we deal on behalf of our men, gave notice to abrogate the clause in the agreement whereby any differences should be submitted to arbitration. This was inexplicable to us, as it seems to be a backward step, and one which revives the use of force and a return to barbarism, as against that of reasonableness and justice and a step towards a higher civilisation whereby men resolve their differences by reason and not force.

However, it is the choice of the trades unions, but, as you are aware, although they have disavowed the industry's arbitration machinery, we made it known that we were quite prepared to place the matter before any form of voluntary arbitration and would accept the decision so that our employees should not suffer the disabilities, both economic and mental, that go with a prolonged strike.

The Minister of Labour has decided that the proper course is for the present dispute with the union to be submitted to the Industrial Disputes Tribunal, but the union has refused to co-operate and has preferred to call a strike in spite of all the hardship that that will involve.

The strike started last Saturday and no doubt you have read in the newspapers that there have been certain incidents. There are always a certain number of men in cases of this sort who lose their heads, but our men, as a whole, are courteous and correct as they have shown in their contacts with the public in their day-to-day dealings with them. They have also built up over the past 17 years a tradition of service and appreciation of their duties to the public as is evidenced by there not having been a strike in that period.

Taxation

As you know, I have a bee in my bonnet on the matter of taxation which is taken out of the pockets of companies and individuals, the real creators of wealth in this country, and transferred to the Government which is a spending branch of the economy and creates nothing whatever of a productive nature. It may interest you to know how much you contribute to this non-producing entity. The amount of income tax we and our associated companies paid last year was £3,320,000; profits tax was £700,000 and road vehicles licence duty and fuel tax was £5,850,000—a total of no less than £9,870,000.

This year the revenue derived from our bus companies in the United Kingdom was approximately 44 per cent and when I last gave you the percentage in 1952 it was 63 per cent. This will give you some idea of how our business has been diversified, and I believe it will continue in that direction, so reducing our dependence upon the revenue from our United Kingdom bus companies.

However much hard work our executives and general managers of our United Kingdom bus companies give to reducing running expenses by increasing efficiency, there is one hard core of expense we cannot get over, and that is the penal tax of 2s. 6d. a gallon on fuel oil. Other forms of public passenger transport do not pay it. Why we, as carriers of the general public, should be penalised, I do not know.

Our interests in Canada continue to expand, and we have had a successful year. The revenue of Canadian Motorways since we acquired it has been in keeping with our expectations, and a dividend was paid at the end of our financial year which was equivalent to 10 per cent on the money we had invested; earnings were substantially higher than this. Today the Canadian Group operates over 1,700 vehicle units, which compares with 575 when we acquired the business in November, 1955, and 1,450 when I met you last year.

Our Jamaican Omnibus Services are quietly strengthening their position in Kingston. The company has provided a first class service for the people, and its results in terms of profit are satisfactory.

The African Transport Company in which we have an interest, and which is controlled by the United Transport Company, has continued to go ahead in a quiet way. Our interest in Rhodesia United Transport, which is under the same control, and the Chairman of which is our good friend Mr. John Watts, has continued to make progress in a way which is extremely satisfactory.

In addition to strengthening the existing routes, the company has secured a substantial freight transport contract for the Kariba hydro-electric project. Work under this contract will extend over a period of years and will entail, over the period of the contract, the acquisition of an additional 110 heavy duty vehicle units. The number of vehicles employed by the Group is now 1,000 as against 660 when I addressed you a year ago. Your directors look forward with great confidence to the future of this company.

Other Interests

In the year under review we had to provide further finance for Associated-Rediffusion. In addition, the opportunity arose to purchase on terms which we considered advantageous a major part of an interest, consisting of shares, loan stock and temporary advances, from another shareholder. In conjunction with other shareholders of that company we availed ourselves of this opportunity of increasing our holding. We are extremely satisfied with the progress of the company, and there is no doubt, provided there is no setback in the position of the country, that it will give us an adequate return for the risk we took.

Broadcast Relay Service, as you no doubt know, has again had a successfull year. Our laundries continue to show steady improvement.

The Future

During the last two years we have, as you know, taken an interest in a number of new projects and have been in the process of diversifying our interests. This period might be termed the sowing of the seed, and I am pleased to say that little if any of the seed has fallen on stony ground.

Today all the plants are healthy and I think I may say growing lustily. We are already reaping a modest harvest, but I believe the next two or three years will show, subject to world conditions remaining stable, increased harvesting operations which should be reflected in a substantial rise in revenue.

The report and accounts were adopted.

S.N.C.F. Rectifier Locomotive Tests

Frequent starts on 1 *in* 100 *gradients with loads of over* 2,000 *tons*

Results have now been published of a series of adhesion tests carried out in May by the Electric Traction Research Department of the French National Railways, in which an 85-*tonne* Bo-Bo rectifier locomotive of the " 12000 " class showed its ability to start with loads as heavy as 2,400 tons on rising gradients of 1 in 100.

The tests took place between Briey and Audun-le-Roman on the 25-kV., 50-cycle, Lille-Basle main line, where there is an almost unbroken succession of gradients of 1 in 100. Their object was to obtain data regarding adhesion between wheel and rail under various conditions, and they were carried out on sanded rails.

On May 3 the locomotive with a train of 35 wagons, weighing 2,013 *tonnes*, made two starts approximately 2·5 miles apart. During the first start the effort at the drawbar was 37·4 *tonnes*, and during the second 34·2 *tonnes*. It was then decided that it should be possible to start a still heavier load; the recordings showed that the limit of adhesion had not been reached and that the rate of acceleration, although low, could be reduced still further.

Accordingly, on May 10, a train was made up of 40 wagons with a total weight of 2,120 *tonnes*. The effort at the drawbar for two starts was between 36 and 37 *tonnes*, and it was clear that further improvement was possible. After 11 wagons had been added, bringing the load up to 2,223 *tonnes*, two more starts were made without difficulty.

Reduced Acceleration

During the above four tests the maximum drawbar effort at starting was 38 *tonnes*, which is equivalent to approximately 40 *tonnes* at the wheel rim, these figures being confirmed by readings of the motor current. This effort at the wheel rim corresponds to an overall coefficient of adhesion for the locomotive of 47 per cent, and oscillograph readings arranged to detect any incipient slipping showed that this figure could not be exceeded without risk of wheelspin. However, on the second start, with 2,223 *tonnes*, the acceleration up to 6·2 m.p.h. was at the average rate of 0·11 ft. per sec. per sec. commonly stipulated in the performance of d.c. motors in normal service on the S.N.C.F. The motors of the " 12000 " class of locomotives can function for some time with an overload of 1·7 to 1·8 times the current taken in those conditions so that a rate of acceleration even lower than ·077 ft. per sec. per sec., is possible. A reduction of this order in acceleration means that the tractive effort required at starting works out at about 2·25 lb. per *tonne* less, and this allows an increase in the load which can be started for a given total tractive effort at the wheel rims.

With the co-operation of the Société des Mines in providing some of their own wagons so that the trials could be continued the same day, a train of 54 wagons, with a total weight of 2,424 *tonnes*, was made up and two separate starts were carried out on a rising gradient of 1 in 100. During the final test the following maximum efforts were recorded: 38 *tonnes* at starting; 36 *tonnes* at 1·2 m.p.h.; 34·3 *tonnes* at 3·1 m.p.h.; 33·6 *tonnes* at 4 m.p.h.; and 33·7 *tonnes* at 5·3 m.p.h.

From the speed chart it was possible to deduce an acceleration of ·077 ft. per sec. per sec. In all these trials part of the train was on a curve. These performances have further confirmed the ability of 50-cycle locomotives with ignitron rectifiers to start heavy trains, as a result both of the good adhesion characteristics inherent in their mechanical and electrical design, and of the capacity of their motors for prolonged effort at low speeds.

Eastern Region Diesel Instruction Train

To assist motive power depot staff of the Eastern Region in understanding the engines and the equipment of diesel-mechanical railcars, and to demonstrate the principles of repair, maintenance and servicing, a diesel instruction train, will tour running sheds of the Region. The instructional facilities available on the train are additional to the normal training given to drivers and technical staff; the visit of the train to each centre will provide the staff with an opportunity for refresher training.

The train, stated to be the first of its type on British Railways, consists of two bogie coaches which have been specially converted. A room in one of the vehicles displays a large number of components of diesel railcars and shunting locomotives. Many of these are sectioned, enabling a high standard of instruction in their operation to be given. To assist driver training, complete sets of the controls of a diesel railcar and of a diesel-electric shunting locomotive are provided; the former includes the various indicator control lights which are arranged to simulate a vehicle in service.

The second vehicle contains a lecture room with seating accommodation for 38 persons, besides a separate projection room equipped with two cinema projectors with full sound equipment, a slide and film-strip projector, and an epidiascope.

This coach also incorporates living quarters for the Resident Instructor, who will be with the train throughout the period it is on tour. The instruction train will tour the whole of the Eastern Region, calling at the principal motive power depots where it will remain for periods of up to a week or longer, depending upon the number of staff at each centre.

National Builds Free-Piston Gasifyer

Details have been released of a 1,000-h.p. free-piston gasifyer, type GS. 34, which has been built by the National Gas & Oil Engine Co. Ltd.

The unit, which will form one of the exhibits of the Brush Group, at the Engineering, Marine, Welding and Nuclear Energy Exhibition, to be held from August 29 to September 12, at Olympia, London, is stated to be the first free-piston unit of its type and power to be wholly manufactured in this country and is made under licence from Alan Muntz & Co. Ltd., Pescara, and Société Etude et Participations Eaux-Gaz-Electricité Energie S.A. (S.E.P.). Running tests at the National works in Ashton-under-Lyne, have already been undertaken. The gasifyer has a continuous rating of 1,232 gas h.p. which is equivalent to approximately 1,000 s.h.p. for marine propulsion duties. The stationary design develops 1,250 gas h.p. which is equivalent to approximately 720 kW. as a continuous rating.

Up to 10 gasifyer units can feed gas to a single turbine which may be coupled direct to the driven machine or through reduction gears. Two turbines can be connected to a single reduction gear and sets can be arranged for powers from 1,000 to 20,000 h.p. for marine and industrial applications.

This form of power unit is also suitable for rail traction applications, a basically similar type of unit having been incorpor-

View of display room of instruction train showing some of the components of diesel railcars and locomotives

ated in a locomotive built in 1950, which has been running on the French National Railways. This locomotive was described in our associated journal, *Diesel Railway Traction*, August 1952 issue. The National-built machine incorporates many improvements over its French counterpart which have been developed during the last few years.

The turbine drive, as is generally known, is well suited for rail traction, because the high starting torque of a turbine eliminates the need for a change-speed gearbox or an electric transmission system, required with a diesel power unit, thus reducing first costs of transmission and the running costs because of cheaper fuels. Good starting characteristics of the free-piston engine are ensured because of the ability to control the compression ratio.

An increased locomotive power output of 2,000 h.p. can be obtained by using two 1,000-h.p. units in tandem feeding into one or two suitable turbines. Because of the more generous loading-gauge, two gasifyers could be fitted side-by-side on locomotives designed for French National Railways, whereas in this country, they would have to be mounted one above the other.

Fuel Consumption

The gasifyer, which weighs 8 tons, can run trouble-free on any fuel of up to 3,000 secs. viscosity; consumption is stated to be in the order of 0·39 lb. per shaft h.p.

Gas turbines, suitable for matching with the gasifyers, are being manufactured by the Brush Electrical Engineering Co. Ltd.; a 1,000-h.p. unit, for example, complete with bed plate, weighs 2¼ tons and is 4 ft. 7 in. in length. This unit is one of a range of turbines which the company has designed specifically for use with single or multiple units of gasifyers.

Studies are being made on the application of gasifyers to rail traction, the Brush Group being able to supply the whole of the traction equipment; Brush Electrical Engineering would build the turbine with Brush Traction responsible for mechanical parts.

Kent Coast Electrification Progress

The first stage of the extension of the Southern Region electrified system to the Kent Coast is now getting into its stride. Between Rainham and Newington excavations are in hand which will provide two new passing loop lines each some 2¼ miles long.

The work includes the excavation of 94,000 cu. yd of material from the cuttings which is being used for widening the embankments, the reconstruction or widening of eight bridges, and the construction of new platforms and a footbridge at Newington Station.

The illustration shows two dragline excavators and a bulldozer working towards Quay Lane Bridge (before reconstruction), and (in left foreground) a tracked shovel replacing top-soil on the new cutting slope.

An essential to the faster and more frequent train services envisaged is colour-light signalling, and this is being provided from Brixton through to Margate, Broadstairs, and Ramsgate, including the Sheerness Branch, where the three miles of line between Sittingbourne and Swale Halt will be doubled. Twenty-three sub-stations are to be built, including two on the Sheerness Branch, which will receive current from the national grid at 33,000 V. a.c. and convert it to 750 V. d.c. to feed to the conductor rails. These conductor rails are 300 ft. long and are conveyed to site by special trains. Two of these leave Faversham each Saturday night with 1¼ miles of rail and are unloaded before the passing of the first train on the Sunday morning. The contractor for the civil engineering work is John Laing & Son Limited; this work is being carried out under the supervision of Mr. F. E. Campion, Chief Civil Engineer of the Region.

Work in progress on a cutting in connection with the Newington—Rainham widening scheme, Southern Region

Staff and Labour Matters

Municipal Busmen's Wages

The municipal bus delegates met in London earlier this week to consider the offer made last week by the employers, which was substantially the same as the arbitration award accepted by the provincial busmen who have been on strike. The increase of 11s. a week will apply to employees of all but four of the 95 municipal bus and tram undertakings. Acceptance was finally approved by 56 votes to four.

Provincial Bus Strike Ended

The majority of provincial busmen resumed work on Monday, after acceptance of the increase of 11s. a week awarded by the Industrial Disputes Tribunal.

TV TRAIN EXCURSIONS ATTRACT GLASGOW HOLIDAYMAKERS.—Some 800 holidaymakers on day outings from Glasgow to North Berwick, Arbroath and Oban, were carried by the Scottish Region closed-circuit television train on July 22-24. Entertainment was provided by artistes from the specially equipped sound-proof studio, and the programme was varied by the showing of British Transport scenic films. This is the first time these films have been seen. A cafeteria car was available on each excursion for light refreshments.

250th Metro-Cammell Railcar for British Railways

Four-car diese train unit being delivered by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., one of which is the 250th railcar for British Railways, completed on July 26

Parliamentary Notes

Railway Modernisation Programme

Lord Lucas of Chilworth, in the House of Lords on July 23, asked the Government to state the estimated cost of the B.T.C. railway development scheme based upon current money values, costs, and prices.

Lord Mancroft, Minister without Portfolio, stated that the railway modernisation programme was an outline plan covering the 15-yr. period up to 1970. Since it was published early in 1955, its scope and timing had been materially affected by certain technical decisions of major importance and by the obligation placed on the Commission in the White Paper of last year to break even by 1961 or 1962.

"The programme has got under way much sooner than was originally planned," he added, "and is now well ahead of schedule. The effect of these factors and of the level of prices on the timing and cost of the programme is now being reassessed by the Commission, and I regret that I am not able to give the House any revised figures of cost."

Lord Lucas pointed out that this answer was not in conformity with what he would have thought was the practice of a business concern like the B.T.C. Two years ago the estimated cost of the modernisation plan was £1,200 million. He was surprised that the Commission had not kept abreast of the times by having up-to-date figures. If he put down a question in about a week's time he hoped that he could be told whether the plan would now cost in the region of just under or just over £2,000 million.

Lord Mancroft replied that the original figure was, admittedly, originally £1,200 million. He would be very surprised, but gratified, to learn that that figure had gone down, but could not say to what figure it had been raised.

Lord Lucas observed that the taxpayer had the right to be kept informed of the new values of projects of this gigantic size. It should be within the realms of possibility for the House to be told the Commission estimate of cost based on modern prices.

Lord Mancroft replied that the Commission hoped very shortly to be able to give this figure. There had been changes more wide sweeping than ordinary business expected to meet in its day-to-day affairs. It did not detract in any way at all from the desire of the B.T.C. to be completely frank with the owners or the taxpayer.

Questions in Parliament

B.T.C. Purchasing Procedure

Mr. G. Strauss (Vauxhall—Lab.) asked the Minister of Transport & Civil Aviation on July 24 what investigations he proposed to make in the purchasing arrangements of the B.T.C. in accordance with his recent undertaking.

Mr. David Jones (Hartlepools—Lab.) asked what action he proposed so as to implement the undertaking given respecting purchases by the Commission.

Dame Irene Ward (Tynemouth—C.) asked whether he was satisfied that the structure of the Commission gave it adequate powers to purchase stores and equipment in accordance with the best traditions of private industry.

Mr. Ernest Davies (Enfield, E.—Lab.) asked what had been the result of the Minister's consultations with the Commission as to the placing of contracts in connection with the modernisation programme of British Railways.

Mr. Harold Watkinson, replying to these questions together: At my request the Chairman of the Commission has sent me a full report. The report sets out the new purchasing policy which the Commission decided to adopt on May 30, 1957, and also deals fully with allegations made in this House about specific contracts.

Because of the importance of this issue to the railway modernisation plan, which the Government is underwriting, I have felt it essential to ensure that the facts are established expertly and impartially. This is also the wish of the Chairman of the Commission.

I have accordingly asked Sir Harold Howitt, past President of the Institute of Chartered Accountants, who has a wide experience of financial and public affairs, to examine this matter and let me have his views upon it as soon as possible. It is my intention to publish his findings and the Commission report.

Mr. Strauss: It might be helpful on this occasion to get the advice of a senior officer in the Ministry of Supply, because that Department is accustomed to buying large quantities of products from British industry, sometimes when delivery is very urgent. Would not the advice of such an officer be very useful?

Mr. Watkinson: I have told Sir Harold Howitt that he has complete freedom of action as to this investigation. I think it is also fair to say that the Commission has particularly asked me that it should be as widespread and detailed as possible.

Dame Irene Ward asked when the report might be expected.

Mr. Watkinson: I have asked Sir Harold Howitt to do it as quickly as possible, but I am anxious, as is the Commission, too, that it should be a very detailed investigation.

Mr. David Jones: Will the Minister first confirm that the report is in fact the report of a committee of more than one high-ranking officer of the Commission, not presided over by Mr. Gethin? Secondly, in view of the grave apprehensions felt by large numbers of people, not least by the three-quarters of a million people employed in the industry, will he make available in the Library of the House a copy of the report which Mr. Gethin sent to him?

Mr. Watkinson: The report I am referring to, which, of course, I have handed to Sir Harold Howitt, is a report to me by the Chairman of the Commission. Sir Harold Howitt will undoubtedly ask for any further documents he wants, either from the Commission or from anybody else, and I am sure that he will obtain them.

Mr. A. L. Goodhart (Beckenham—C.) asked about the procedure to be followed in this inquiry. Would Mr. Gethin or his counsel have an opportunity of questioning other witnesses. In view of the public concern about the allegations which had been made, it would be desirable to have this inquiry in public.

Mr. Watkinson: I do not think that my hon. Friend is, perhaps, helping his constituent by trying to put limitations and conditions on this investigation. I am anxious to have it done as expeditiously and efficiently as I can, and I am satisfied that that is best met by allowing Sir Harold Howitt to do what he thinks best.

Mr. E. Popplewell (Newcastle-upon-Tyne W.—Lab.) hoped that the inquiry would also go into the question of the closing of the Brighton locomotive works where, it was alleged, some 350 people had been and were engaged in producing complete direct admission valves for the continuous brake at a cost of about £6, and the contract had been let to private enterprise at a cost of about £15 for a complete direct admission valve unit.

Mr. Watkinson: I shall certainly draw it to Sir Harold's attention.

Mr. Walter Monslow (Barrow-in-Furness—Lab.): Some of us, having long experience of the railways, have a very shrewd suspicion that Mr. Gethin was anti-nationalisation, anti-Labour, and anti-trade-union.

Mr. C. Howell (Perry Barr—Lab.): In view of the alarming statements which have been made in the Press accusing the Commission of discharging Mr. Gethin for making the charges, is it not possible for the charges and the report which Mr. Gethin is supposed to have produced to be made available in the Library?

Mr. Watkinson: I do not think that that is for me. I have seen to it that Sir Harold Howitt has a copy of Mr. Gethin's allegations. I think that that is all that I am required to do.

Cost of Railway Modernisation

Mr. Ernest Davies (Enfield E.—Lab.) asked the Minister of Transport & Civil Aviation on July 24 to what extent the estimated cost of £1,200 million for the British Railways modernisation programme was now expected to be exceeded, in view of the subsequent rise in the general level of prices.

Mr. Watkinson, in a written reply: The B.T.C. is now reassessing the cost of the programme to take account of the fact that it is ahead of the original schedule and that recent major technical decisions have altered its scope.

Smoking in Trains

Mr. Frank Beswick (Uxbridge—Lab.) asked the Minister of Transport & Civil Aviation on July 17 if, in view of the new evidence regarding the danger to health of smoking, he would give a general direction to the B.T.C. not only to set aside adequate numbers of train compartments in which smoking is prohibited, but also that these compartments should be more prominently indicated, and the prohibition enforced, with more adequate penalties for defaulters.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary: The Government policy is to make known the risks of smoking, leaving it to individuals to make up their own minds. If the public want more non-smoking compartments, the B.T.C. is ready to provide them. The present notices seem adequate, and the B.T.C. is shortly submitting to the Ministry by-laws increasing the penalty for smoking offences.

ELECTRIC RAZOR POINTS IN NORTH EASTERN REGION.—Because of the increasing popularity of the electric razor, and with a view to increasing the toilet facilities available to passengers, British Railways, North Eastern Region, are equipping the gentlemen's lavatories at certain of the more important stations with universal shaver sockets to enable passengers to use their own electric razors. On Monday, July 29, this facility was brought into use at Newcastle Central and York Stations. Similar equipment will shortly be provided at Middlesbrough, Darlington, Hull, and Leeds. There will be a charge of 3d. for the use of these sockets, which are suitable for most types of electric razor.

Contracts and Tenders

Agencies required for diesel motive power and rolling stock by Pakistan firm

British Railways, Eastern Region, have placed the following contracts:—

Brightside Heating & Engineering Co. Ltd., Sheffield, 9: supply, delivery, and installation of boiler plant, heating system, oil storage equipment, and all piping for engine repair shop, Stratford

Samuel Butler & Co. Ltd., Stanningley, Nr. Leeds: general repairs to bridge No. 1376 carrying suburban lines, between Hackney Downs and Rectory Road

W. & C. French Limited, Buckhurst Hill, Essex: construction of mass concrete retaining wall and renewal of cess drain at slip adjacent to bridge No. 1900, between Hoe Street and Wood Street Station.

British Railways, London Midland Region, have placed the following contracts:—

Cawood Wharton & Co. Ltd., Harrogate, Yorks: amenities for Signal Engineers Department, Bank Quay, Warrington

Gee Walker & Slater Limited, London, W.1: temporary office accommodation for Regional Architect, Euston

Leonard Fairclough Limited, London, N.W.5: partial renewal of brickwork in arches, spandril walls and parapets, viaduct between Camden Road and Gospel Oak, Hampstead Branch

Lexton (London) Limited, Penge, S.E.20: repairs to brickwork bridge No. 1 St. Pancras

Arthur S. Nixon Limited, Carlisle, staff amenities and heating of wagon shop, Carlisle Currock

W. H. Heywood & Co Ltd., London, S.W.1: patent glazing, renewal of roof covering motive power depot, Bangor

W. J. Whittall & Son Limited, Birmingham, 4: amenity blocks, wagon repair shop, Vauxhall, Birmingham.

British Railways, North Eastern Region, have placed the following contracts:—

E. Boydell & Co. Ltd., Manchester: six, three cu. yd. capacity diesel dumpers, N.E. Region

L. C. Abdale & Son, Darlington: new staff accommodation for Traffic & Carriage & Wagon Engineers Department, and demolition of existing cabin

Squire W. Swift Limited, Selby: new signalbox, Balne

Baxter Bros. (1920) Limited, Newcastle: cleaning and painting, Newcastle Central Station

Chamberlain Industries Limited, Leyton: one Staffa "Three" mobile crane, N.E. Region.

British Railways, Scottish Region have placed the following contracts:—

George C. Kirk Limited, Glasgow: repairs to roof, Glasgow Central Station

Lambhill Iron Works Limited, Glasgow: steelworks and roofing for new goods shed, Barrack Street Depot, Glasgow

P. & W. Anderson (Glasgow) Limited, Glasgow: new office accommodation, Eastfield Motive Power Depot, Glasgow

Alfred Herbert Limited, Coventry: provision of two boring facing machines, St. Rollox Works, Glasgow

Wm. Latimer & Co. Ltd., Glasgow: roof painterwork, Glasgow Queen Street Station

Morrison Dunbar, Glasgow: new apparatus houses, re-signalling, Glasgow Central Station

Kings & Co. Ltd., Glasgow: road repairs, Chapelhall Goods Station

Industrial Engineering Limited, Glasgow: re-roofing engine shed, Hamilton West

Costain Concrete Co. Ltd., Newmains: supply precast concrete units and beams, bridge No. 8, Kilwinning

Industrial Engineering Limited, Glasgow: repairs to station roof, Wemyss Bay

Lanarkshire Welding Co. Ltd., Wishaw: erection of new bracings on bridges 49 and 50 between Callander and Strathyre

Cementation Co. Ltd., Doncaster: repairs to three bridges between Callander and Oban

R. M. Gibson & Co. Ltd., Glasgow: construction of various workshops and stores, motive power depot, Dunfermline

J. Wilson & Son Limited, Lochgelly: provision of signalbox and sundry buildings, Kinglassie Colliery, Fife

Laird Bros., Forfar: roadways and repairs to engine pits, motive power depot, Dundee Tay Bridge

Holland & Hannen & Cubitts (Scotland) Limited, Edinburgh: buidings and floors, Road Motor Engineer's Repair Depot, Kilbirnie Street, Glasgow.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that Mr. Sulaiman Jaffer of Sir E. H. Jaffer & Sons Limited, Jaffer Chambers, Victoria Road, Karachi, 3, has advised the United Kingdom Trade Commissioner in Karachi that his firm wish to obtain United Kingdom agencies for diesel-electric locomotives, diesel rail-cars and trailers, wagons, and all-welded steel carriages.

The Pakistan firm expect some large Government tenders to be issued in the near future for railway equipment, and wish to hold the agencies so that they may be able to quote against them. Manufacturers interested in this agency enquiry should write direct to Mr. Sulaiman Jaffer, at the same time notifying the United Kingdom Trade Commissioner, First Floor, Finlay House, McLeod Road, Karachi.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for superheater elements as follows:—

(*a*) 398 superheater element tubes, sterling type second row to R.P. & T. drg. No. E/SL-216/94

(*b*) 463 superheater flue tubes, 16 ft.-1¼ in. × 5½ in. steel for WP and WG class locos. to R.P. & T. drg. No. E/SL. 126/44 (D.G.S. & D. No. 7450), fig. A and I.R.S. specn. No. R.23/51, also for E.R.W. quality of tubes to B.S.S. 1654-1950.

The issuing authority is the Director General of Supplies and Disposals. The tender No. is (*a*) P/SW2/18129-H/I, and (*b*) P/SW2/18128-H/IV. Bids should be sent to the Director General of Supplies and Disposals, Shahjahan Road, New Delhi. The closing date is (*a*) August 13, 1957, and (*b*) August 9, 1957. A set of tender documents, including drawing, is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). Local representation is essential. The reference (*a*) ESB 17618/57 and (*b*) ESB 17631/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the Engineering Department of the Tunisian State Railways is interested in contacting overseas firms for the purchase of a wide range of machines, machine tools, equipment, and locomotive wagon and coach parts. The railway authorities would like to receive copies of catalogues and other literature to give them an indication of the range of equipment available. United Kingdom manufacturers interested in this enquiry are invited to send their catalogues, literature or other details either to the Branch, Lacon House, Theobalds Road, London, W.C.1, quoting reference ESB/17300/57 or to the Commercial Section, British Embassy, 5 Place Cardinal Lavigerie, Tunis, quoting reference 1371/O.T.28, who will arrange for the documents to be handed to the railway authorities.

The Director-General of the India Store Department invites tenders for the supply of locomotive boilers. See Official Notices on page 148.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from South Africa for cast steel brake shoes and stanchion sockets as follows:—

4,000 brake shoes complete to drawing CME.68/27518/337

2,000 stanchion sockets complete to drawing CME.149/12-357.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed Tender No. H.6732: Steel Castings should be addressed to the Chairman of the Tender Board, South African Railways, P.O. Box 7784, Johannesburg. The closing date is August 9, 1957. A copy of the tender documents including drawings is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1.). A photo-copy set can be purchased from the Branch for 6s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade. Firms wishing to collect photo-copy sets of tender documents are advised to notify the Branch in advance of their requirements. The reference ESB/18313/57 should be quoted in any correspondence with the Branch.

BRITISH STANDARD FOR DETERMINATION OF DROP POINT OF PETROLEUM GREASES.—The British Standards Institution has published a further document in the series of methods of test for petroleum products which have been developed by the Institute of Petroleum and are being given national status by publication as British Standards. The new standard, B.S. 2877, is technically identical with IP 132/57, and contains full details of the procedure to be adopted in drop point determination. Copies, price 2s. 6d., may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1.

Notes and News

Railway Traffic Interrupted by Floods in Japan.—The floods in Japan last week, caused by heavy rains, have caused widespread interruption to railway traffic in several parts of the island of Kyushu, including Nagasaki. It is not stated whether the submarine Kammon Tunnel, linking Kyushu with the island of Honshu, has been affected.

Transport Arbitration Tribunal Closes Down.—The Transport Arbitration Tribunal, which was established under the Transport Act, 1947, to determine matters of compensation in respect of undertakings acquired compulsorily by the British Transport Commission, has now completed its work. The Tribunal offices at Watergate House, 15, York Buildings, Adelphi, London, W.C.2, have in consequence been closed as from July 31, 1957.

Study Group for Channel Tunnel Project.—The protocol of an agreement to set up a study group for the Channel Tunnel project was formally signed at the offices of the Suez Canal Company in Paris on July 26 by representatives of the four groups who have combined to make such a study. These are a British group, under the ægis of the Channel Tunnel Company, represented by Mr. Leo d'Erlanger, Mr. A. B. B. Valentine, Member of the B.T.C., and Mr. A. G. Whitaker; a French group for Continental Europe, represented by Monsieur Louis Armand, Chairman of the French National Railways and of the International Union of Railways (U.I.C.), Monsieur Jacques Getten, Director of the Société Concessionnaire for the Channel Tunnel, and Monsieur de Wouters, President of the Fédération Routière Internationale; the Suez Canal Company; and an American group, represented by Technical Studies Inc. The steering committee will consist of three representatives of each of the first three groups and one American representative. The committee will also include two personalities, one British and one French, who will be chairmen. It will meet alternately in London and Paris. A director of technical studies is to be appointed shortly.

Institute of Travel Agents.—The first examination held by the Institute of Travel Agents took place at the end of April (see also this week's Personal Section). In June, 1953, the Association of British Travel Agents and the Institute of Travel Agents amalgamated to become the Association of British Travel Agents Limited, the Secretary of which is Mr. A. R. Colmer. The present Institute was set up in 1956 for educational purposes. A preparation course for the Institute examination was held at the City of London College from September to March last, and the examination, which is the intermediate, was sat for by 22 applicants, 14 of whom passed. Lt.-Commander S. S. Claremont, R.C.N. retd., has been appointed Secretary of the new Institute. A correspondence course has been initiated, and future plans include further examinations in main provincial centres.

Proposed Closure of Further G.N.R.(I.) Lines.—The Great Northern Railway Board proposes to seek authority from the Minister for Industry & Commerce in the Republic of Ireland to terminate wholly the passenger transport services on the Dundalk - Ballybay - Clones, Glaslough-Monaghan-Clones-Cavan, and Ballyhaise-Belturbet lines, and has given notice that objections must be lodged by August 28. It is proposed to institute alternative road services in the areas concerned. These plans embrace what are known as the "stump" lines—those that join with the common lines the services of which the Government of Northern Ireland proposes to terminate on September 30. The common lines to be closed to all traffic on that date in Northern Ireland are: Omagh-Newtownbutler, Portadown-Tynan, and Bundoran Junction-Belleek. From the point of view of passenger traffic, the proposal to terminate the "stump" lines in the Republic is considered logical, but it is noted, however, that the Board does not propose to withdraw its freight train services on these lines; both passenger and freight services are being withdrawn on the common lines in Northern Ireland.

Edgar Allen & Co. Ltd. Results.—The total value of sales of Edgar Allen & Co. Ltd., for the year ended March 31, 1957, were a record. The turnover of the group as a whole and of the parent company alone was greater in value respectively by 15 per cent and 12 per cent than in 1955-56. Group trading profits advanced to £608.908 from £445,512, and after allowing for tax of £380,060 (£284,842), net profits were higher at £257,150 (£192,653). The ordinary dividend is maintained at 12½ per cent.

English Electric at the Engineering & Marine Exhibition, 1957.—One of the exhibits at the English Electric Co. Ltd. stand in connection with the Engineering, Marine, Welding, & Nuclear Energy Exhibition, to be held at Olympia, London, at the end of this month, is a four-cylinder diesel generator unit used for powering the Hastings main-line and Hampshire multiple diesel sets, for the Southern Region. The engine concerned is the 4SRKT type which is supercharged and develops 500 b.h.p. at 850 r.p.m. The Exhibition will be held from August 29 to September 12.

Extra Eastern Region Trains for August Bank Holiday.—Over the Bank Holiday period, from August 1 to 7, the Eastern Region will run 268 additional main-line and 140 excursion trains. Many of the relief trains will strengthen services between London and Scotland, including Edinburgh, Glasgow and Aberdeen, the West Riding of Yorkshire, Newcastle, and principal East Anglia towns. A number of important cross-country services will be duplicated. Refreshment car and seat reservation facilities will generally be maintained as usual and will be extended to some of the additional trains. Additional sleeping cars will be run on booked and relief services during the holiday period.

European Coal & Steel Community Rate Agreement with Austria.—An agreement on railway rates has been signed in Luxembourg between the Austrian Federal Government, the member States of the European Coal and Steel Community and the High Authority. The agreement, of which the aim is to abolish "breaks in rates" at the Austrian frontier, will extend the Community international railway through-rates system to the transport of coal and steel crossing Austrian territory between the German-Austrian and Italian-Austrian frontiers. The application of this agreement, it is hoped, will develop such traffic in transit to the advantage of both partners to the agreement. A commission will be set up to deal with any practical problems arising as to transport.

N.E. Region Headquarters Connected with Telex Services.—Communication has been improved by the connection of the York Headquarters of the North Eastern Region with the Post Office Telex service. This facility will enable those traders who

Eastern Area Board Visit to Lowestoft and Yarmouth

Sir Reginald Wilson, Chairman of the Eastern Area Board, during a visit of inspection at the Sleeper Depot, Lowestoft; on the right is Mr. G. A. V. Hayes, Secretary of the Board

are themselves linked with Telex to communicate directly with the York Headquarters; the telex number is 57-207. The service will be a valuable addition to the existing means of communication available to firms situated outside the boundaries of the Region, whilst for traders within the Region, it will provide a useful supplement to the carrier-wave telephone system which at present assists traders by linking the Region's District Offices with the headquarters at York.

Aldershot & District Traction Co. Ltd.—The dividend of the Aldershot & District Traction Co. Ltd. is held at 10 per cent with an unchanged final payment of 8 per cent. Net profits for the year ended May 31 rose £72,002 from £52,656 for 1955-56, after tax of £35,732 (£56,779).

Derailment Caused by Children.—Tampering with points by children is stated to have been the cause of the recent derailment of the Canadian National Railways "Continental Express" 36 miles east of Winnipeg. Eighty-six people were injured, five seriously. Sixteen vehicles left the rails. An official announcement states that "Evidence has been obtained that the switchlock was removed from its position and the switch handle raised by juveniles immediately before the approach of the train, causing the derailment. Investigation is proceeding."

August Bank Holiday Special Trains in the N.E. Region.—Special trains which will be run by the North Eastern Region over the August Bank Holiday period, August 2 to 6, will total 317, including 166 cheap fare excursions. Relief trains from the West Riding will number 76 and of these 27 will be for London. There will be 131 excursions from the Region to various seaside resorts such as Blackpool (29), Scarborough (27), and Bridlington (26). Other excursions include some for racegoers which will run to Thirsk, Killingworth for Gosforth Park, and Ripon.

Roof of Paddington Station Damaged by Fire.—A fire among contractor's tarpaulins and staging damaged part of the glass roof above platform Nos. 4 to 8 at Paddington Station, Western Region, on Monday evening. Burning material, which fell from the roof, set fire to coaches of three trains standing in the platforms, but there were no passenger casualties, and only two vehicles were withdrawn from service. Coaches were quickly uncoupled and moved out of the danger area. The fire started at about 5.30 p.m. when, it is believed, a tarpaulin was set alight by an acetelyne burner flame; the fire was extinguished an hour later. Trains were subject to delays of up to 45 min., but normal working was resumed by about 8 p.m.

Rise in Steel Prices.—Increases in maximum prices of iron and steel products, and of scrap, averaging about £1 a ton over various ranges, took effect on August 29; they average about 7½ per cent over the whole range of products, but are higher in some instances and lower in others. A statement by the Iron & Steel Board says that certain increases in costs last year have up to now been carried by the industry. In addition there are the higher charges announced for coal, coke, scrap and inland transport, and other consequential price changes. There have also been further increases in the cost of some imported materials. In the board's view it would not be possible for the industry to carry the heavy burden represented by these increased costs and at the same time support the major investment programme for modernisation and expansion of which relevant particulars have now been announced.

British Oxygen Interim Dividend. It is announced that the interim dividend on the ordinary stock of British Oxygen Co. Ltd., which totals £17,047,166, is maintained as for last year at 4 per cent. The final payment for the year which ended September 30 was 10 per cent.

Southern Region Arrangements for August Holiday.—The Southern Region will run nearly 300 additional main-line trains between London and the South and South East Coast resorts and the West of England during the August Bank Holiday weekend. There will be cheap fares to most seaside resorts and cheap afternoon tickets from London and the suburbs to the Kent and Surrey Hills. Combined rail and steamer trips will be made to Windsor, Chertsey, Maidenhead and Marlow. Cheap tickets will also be issued in connection with the Royal Navy "At Home" at Chatham and Portsmouth, and Epsom Races. Cheap day no passport excursions to the Continent including trips to Dieppe via Newhaven and to Boulogne via Folkestone are also planned.

Improvement of B.T.C. North Eastern Waterways.—The British Transport Commission has announced programmes of improvements on two major waterways in the North Eastern Division of British Transport Waterways: the Aire & Calder Navigation and the Sheffield & South Yorkshire Navigation. The programmes form part of the Commission £5½ million development plan for its principal inland waterways, and are designed to enable these valuable water routes, which link the West Riding of Yorkshire, and the towns of Sheffield, Rotherham and Doncaster, with the ports of the Humber, to carry even further traffic. Over two-and-a-half million tons a year are at present carried on the Aire & Calder, and nearly a million tons, mostly coal, on the Sheffield & South Yorkshire waterway. The work now to be undertaken includes bank protection and navigation works, mechanisation of locks, and dredging plant.

Charles Roberts & Co. Ltd. Results.—The ordinary dividend of Charles Roberts & Co. Ltd. for the year ended March 31 last is 15 per cent, as in the previous year, the final payment being held at 7½ per cent. A distribution of 2½ per cent, not subject to tax, was paid with the interim dividend. In the previous year a centenary distribution of 20 per cent, not subject to tax, was paid with the interim, and a distribution of 2½ per cent, not subject to tax, with the final. Group net profits for 1956-57 fell to £118,693 (£144,178) after tax of £254,600 (£222,985).

Ribble Motor Services Annual Meeting.—At the annual meeting of Ribble Motor Services Limited on July 4, Mr. R. P. Beddow, the Chairman, said that financial results for the year ended March 31, 1957, had been influenced by the unfavourable weather of the summer of 1956 and by the consequences of the Suez crisis. During fuel rationing, some 1,000,000 vehicle-miles had to be cut—about 2 per cent of a normal year's mileage. This achieved economies in working costs and more passengers than usual were carried, but there were increases in costs for wages, tyres, and so on as well as for fuel itself. The net profit was almost the same as in the previous year, but he regarded such results as inadequate to preserve the long-term interests of the company and its passengers. The report and accounts were adopted.

Associated British Engineering Dividend.—The ordinary dividend of Associated British Engineering Limited is maintained at 10 per cent with an unchanged final payment of 6 per cent. Net profits for the year ended March 31 last fell sharply to £182,663 from £304,856 for 1955-56, after allowing for tax of £212,394 (£209,954), and crediting tax provision no longer required of £11,019 (£26,252). Credit taken from general reserve is £50,000 (nil). The general reserve is allocated £100,000

Cafe on Euston Departure Concourse

Continental cafe recently opened near main-line departure platforms at Euston Station

(£200,000), and provision for contingencies on an Egyptian contract takes £50,000 (nil).

White Paper on Commonwealth Investment.—The White Paper on Commonwealth development, published earlier this week, shows that the annual investment in the Commonwealth and special assistance to colonial territories by this country has averaged nearly £200 million since 1953. This figure is stated to represent 1¼ per cent of gross national produce and between 7 and 8 per cent of fixed home investment.

Brazil Railway Company.—The 1956 report of the Brazil Railway Company states that the report of the Joint Committee of Bondholders dated July 8, 1957, which is published with the Brazil Railway Company accounts, refers to the recent agreement between the French and Brazilian Governments to settle by arbitration the claims of the Port of Para Company, and of the bondholders of the Sao Paulo Rio Grande Railway Company, and payment by the Brazilian Government of cash owned by it to the company and to one of its subsidiaries. The Port of Para Company scheme was approved by share and bondholders. Arrangements for arbitration regarding Sao Paulo Rio Grande Railway Company were approved, but have not yet been ratified by the Brazilian Government.

Success of London Bus Control Methods.—London Transport stated on July 18 that bus mileage lost through traffic delays—the index of irregularity—is today less than half of what it was a year ago, although the volume of traffic on the streets is now as great as ever. There are only a third of the gaps in bus services which there were in June and July, 1956, and where they occur, the gaps are shorter. Commenting on this, Sir John Elliot, Chairman of London Transport, stated: "We have done what we set out to do, to hang on to a large part of the bus regularity we achieved when streets were clearer." He attributed this to the work of the bus running control, which has been greatly expanded; the work which the police have done in controlling London traffic since derationing, and the close liaison between them and the bus running control inspectors; and the co-operation which drivers and conductors are giving and the efforts they have made to retain the Suez period improvement.

Railway Stock Market

Holiday influences curbed the volume of business in stock markets, where the general trend has been to somewhat lower prices, though exceptionally, British Funds strengthened with 3½ per cent War loan changing hands at slightly over the £67 level. There are divergent views as to the more immediate outlook for markets. In some quarters there is talk of an autumn boomlet in industrial shares, but it is recognised that much will depend on whether drastic measures of any kind have to be taken to keep inflation in check.

Antofagasta experienced moderate selling and receded on balance from 35 to 33½, while the preference stock at 44 lost half a point. Brazil Railway bonds were 6¼, Taltal shares 12s. and San Paulo Railway 3s. units changed hands around 4s. Elsewhere, United of Havana second income stock remained at 8½. Mexican Central "A" bearer debentures were again 69. In fact, many stocks were scarcely tested by business.

After an earlier further rise, dollar stocks came in for profit-taking, including Canadian Pacifics, which were $72½, compared with $74½ a week ago, while White Pass shares, after rising, also eased, but nevertheless were higher on balance at $23¼.

Disappointment with the financial results put Hurst Nelson shares down sharply to 30s., compared with 36s. a week ago. The dividend is halved at 7½ per cent, because group profits have fallen from £204,432 to £142,091, but shareholders again have 5 per cent, tax free, from balance of surplus on realisation of trade investments, and there is also this time 2½ per cent from dividend equalisation fund. Wagon Repairs 5s. shares have changed hands around 13s. and Gloucester Wagon 10s. shares were 16s., while Charles Roberts 5s. shares moved a few pence lower on balance at 11s. 9d. Beyer Peacock 5s. shares at 10s. 7½d. were virtually the same as a week ago.

Higher dividend hopes kept T. W. Ward active around 82s., while George Cohen 5s. shares held steady at 13s. 9d. on further consideration of the financial results. Babcock & Wilcox were 74s., and Clarke Chapman 172s. 6d. Elsewhere, Hawker Siddeley have remained active around 44s. 9d. on the implications of the widening of the group's interests to atomic energy developments. John Brown shares at 35s. 9d. eased a few pence although the 5 per cent, tax free, dividend was in accordance with the forecast made when the capital was increased by the scrip and rights issues. North British Locomotive were dealt in up to 20s. 7½d., compared with 18s. 6d. a week ago. Shares of the latter company have continued to move fairly sharply on gossip of pending developments, but there is no confirmation of this talk; a little while ago take-over rumours were denied. Steel shares have been hardly affected by the reminder that the industry will be on the nationalisation list in the event of another Labour Government.

Associated Electrical have changed hands around 60s. 9d. and General Electric around 50s. while English Electric were 62s. 9d. and B. I. Cables 50s. 6d. Pressed Steel 5s. shares strengthened to 17s. 3d., Ruston & Hornsby were 33s. 6d. and G. & J. Weir 39s. 3d. British Oxygen held steady at 36s. following the unchanged interim dividend, while British Timken at 66s. 9d. were also the same as a week ago. Renold Chain strengthened to 38s.

Channel Tunnel shares, which fell to nearly 9s. at one time last week, changed hands over 20s., but later receded to 18s.

Forthcoming Meetings

Open currently and until further notice.—British Transport Commission: Historical Exhibition "Transport Treasures" in Shareholders' Meeting Room, Euston Station, from 10 a.m. to 6 p.m. on weekdays, and 2 to 6 p.m. on Sundays. Admission 6d.

August 21 (*Wed.*) to August 31 (*Sat.*).—The "Model Engineer" Exhibition, at the New Horticultural Hall, Westminster, S.W.1. Open daily (except Sundays) from 11 a.m. to 9 p.m.

August 24 (*Sat.*).—Permanent Way Institution, Manchester & Liverpool Section, visit to English Electric Co. Ltd., Preston. Party limited to 30 members.

OFFICIAL NOTICES

EXPERT COST AND WORKS ACCOUNTANT required by Railway Engineering Works in Lancashire. Permanent position with exceptional prospects.—Apply Box 402, *The Railway Gazette*, Tothill Press Ltd., 33, Tothill Street, S.W.1.

DRAUGHTSMEN required with general engineering experience in Automobile or Rolling Stock to train as design engineers on specialised suspension systems. Excellent prospects. Pension Scheme in operation. Situation approximately 20 miles south of London. Apply in writing stating age, training, general experience and salary expected to Box Y 703, c/o Streets, 110, Old Broad Street, E.C.2.

MECHANICAL DRAUGHTSMEN

METROPOLITAN-VICKERS ELECTRICAL CO. LTD. require Mechanical Draughtsmen for the design of Electric and Diesel-Electric Locomotives. These pensionable positions are for Drawing Offices at Trafford Park and Stockton-on-Tees. Please write for application form, quoting reference "L.9" to: Personnel Manager, Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester, 17.

LONDON TRANSPORT require ENGINEERING ASSISTANTS CLASS 1 and 2 for Permanent Way Engineer for preparation of detailed working drawings of permanent way junction work design, setting out and surveys. Knowledge of Permanent Way work in tunnels an advantage. For Class 1 experience in control of staff is required and Ordinary National Certificate studying for Higher National Certificate desirable. For Class 2 Ordinary National Certificate desirable. Salary ranges: Class 1, £915-£950; Class 2, £790-£880. Free travel; Medical Examination.—Please apply within 7 days to Recruitment and Training Officer (F/EV 643), London Transport, 55, Broadway, London, S.W.1.

RELAYABLE RAILWAY MATERIAL for disposal subject to remaining unsold:—

250 tons 95 lb. B.H. RAIL
150 ,, 85 lb. B.H. RAIL
800 ,, 60 lb. F.B. RAIL
140 ,, 50 lb. F.B. RAIL
50 ,, 35 lb. F.B. RAIL

Turnouts, crossings and fittings, etc., to suit the above material.

2,500 Relayable S.1 Type CHAIRED SLEEPERS
1,000 Relayable PLAIN SLEEPERS. CROSSING TIMBERS
2,500 ROADWAY SLEEPERS.

Apply Eagre Construction Co. Ltd., East Common Lane, Scunthorpe. 'Phone 4513/7.

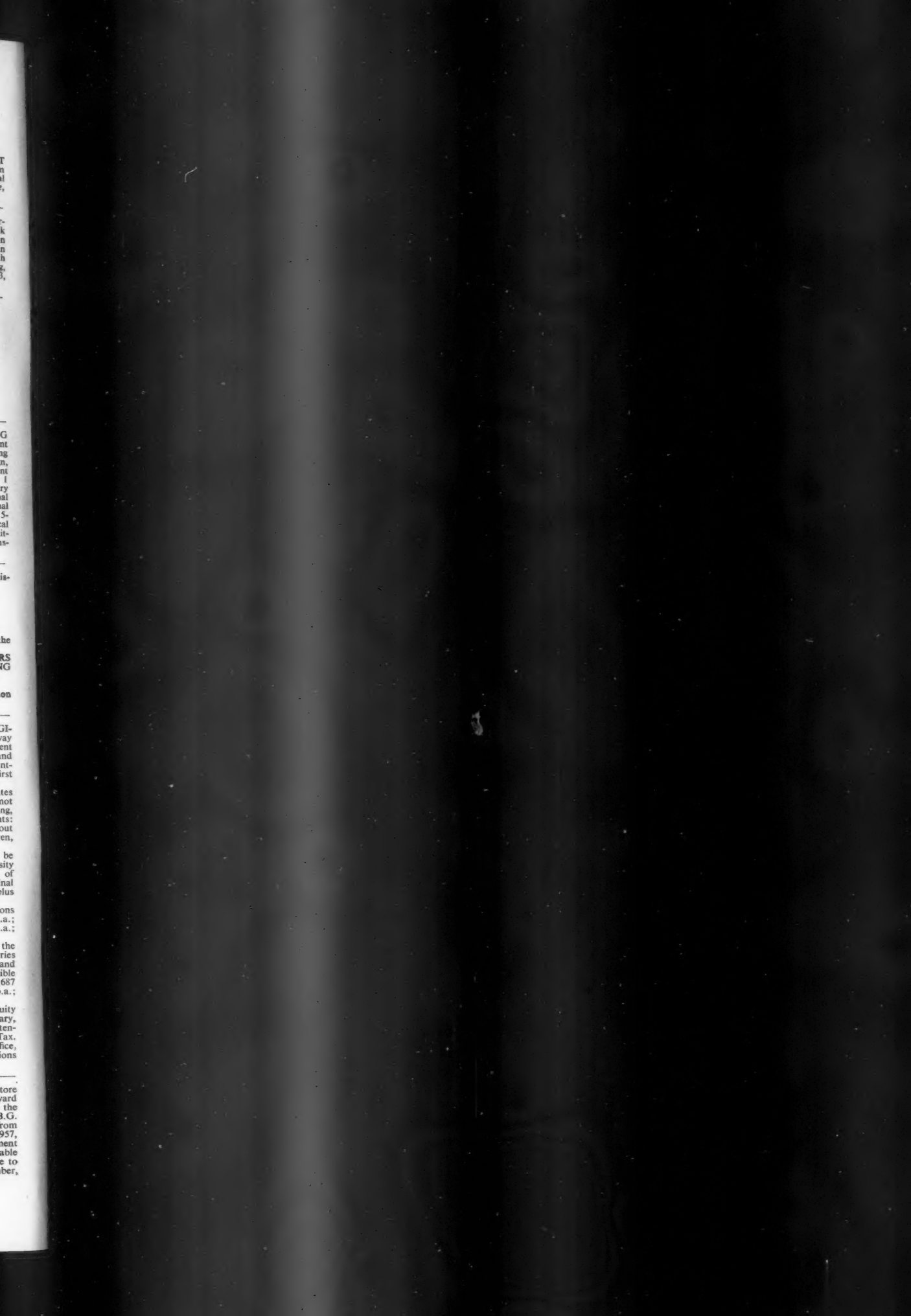
FEDERATION OF MALAYA. CIVIL ENGINEERS are required by the Malayan Railway Administration as Resident Engineers for employment on construction and/or design of new port works and also on general railway engineering work. Appointment on contract/gratuity terms for 3 years in first instance.

SENIOR RESIDENT ENGINEER.—Candidates must be Chartered Civil Engineers and have had not less than 10 years' experience in heavy engineering, preferably on port construction. Gross emoluments: Single men, £2,268 p.a.; Married men without children, £2,618 p.a.; Married men with children, £2,849 p.a.

RESIDENT ENGINEERS.—Candidates must be Chartered Civil Engineers or possess a University degree or diploma recognised by the Institution of Civil Engineers as granting exemption from Final Parts I and II of the A.M.I.C.E. examination plus 2 years' practical experience.

Gross emoluments according to age, qualifications and experience in scale: Single men, £1,218-£2,120 p.a.; Married men without children, £1,440-£2,499 p.a.; Married men with children, £1,531-£2,730 p.a.

For candidates with experience in excess of the minimum quoted above higher commencing salaries can be offered, e.g., a candidate with a degree and 12 years' post graduate experience would be eligible for gross emoluments as follows: Single men, £1,687 p.a.; Married men without children, £2,050 p.a.; Married men with children, £2,253 p.a.

On satisfactory completion of contract a gratuity at the rate of £232 or £324 p.a., according to salary, would be payable. Free passages. Free medical attention. Generous home leave. Low Income Tax. Apply: Director of Recruitment, Colonial Office, London, S.W.1. Give details of age, qualifications and experience. Quote BCD 110/23/04-05/D15.

THE DIRECTOR-GENERAL of India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of 3 LOCO BOILER "DS" class for B.G. Locomotives. Forms of tender may be obtained from the above address on or after the 2nd August, 1957, at a fee of 10s. which is not returnable. If payment is made by cheque, it should please be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Thursday, 12th September, 1957. Please quote reference No. 451/57 RLY.